interLink

Linking the International Community of TERMIS

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In This Issue...

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Sarah Wilburn
TERMIS Administrator

Dear Friends and Colleagues,

Welcome to the latest issue of the TERMIS newsletter! With the completion of the first World Congress meeting that was held in Pittsburgh last month, it is wonderful to see the interactions between the various researchers within the tissue engineering and regenerative medicine fields and to hear about the latest developments and technologies being generated around the world.

I would like to congratulate the organizers of the Regenerate World Congress for their continuous determination and hard work in running and organizing a very successful meeting. The four day conference was attended by 850 registrants, representing 40 countries and five continents. To promote student participation at the Regenerate World Congress, the TERMIS-SYIS organized several student related activities, including a student-meet-mentor workshop, a career center and a professional skills workshop.

To continue the communication and interaction amongst our colleagues, please join us from October 8-11, 2006 in Rotterdam, the Netherlands for the TERMIS-EU annual meeting that will be held at the Congress Centre De Doelen. An early registration fee is being offered until August 1, 2006. To view a complete list of the program and travel details, please visit the conference website at www.etes2006.org. To continue the involvement of student activities at TERMIS meetings, the SYIS is planning similar student activities for the upcoming Rotterdam Meeting in October.

Plans have already begun for the 2007 and 2008 Chapter Meetings and the 2009 World Congress. A complete listing of the TERMIS meeting dates can be viewed within the newsletter. We have begun the solicitation of proposals for the 2010 and 2011 Chapter meetings. If you are interested in hosting a TERMIS meeting within your region, please complete the meeting host form located on the TERMIS website. All applications must be submitted by November 1, 2006.

The Continental Chairs for Asia-Pacific, Europe and North America are constantly working to provide you with the latest information and events being organized within your regions. If you have any suggestions on how to promote TERMIS and the tissue engineering and regenerative medicine field within your specific regions, please contact your respective Continental Chair.

We encourage new ideas and participation from our members. If you have any suggestions on how we could continue to encourage participation within TERMIS or ways to increase awareness of the Society within the regions, please let us know.

See you in Rotterdam in October! If you have any questions, please do not hesitate to contact me at swilburn@termis.org.

Regards,
Alan J. Russell, PhD
President of TERMIS

From the Editor: Dietmar W. Hutmacher, PhD, MBA

OUTLOOK INTO THE FUTURE OF REGENERATIVE MEDICINE

Today, to create a viable and sustainable regenerative medicine industry, Government resources and coordination are essential for driving forward the research efforts in an efficient and successful manner. Already, Germany, Japan, the United Kingdom, the Netherlands, China and Australia have begun national initiatives and efforts to spur the advancement of their national regional regenerative medicine programs. Furthermore, these countries have started to put up significant funding to build national centers of excellence in the field of regenerative medicine.

As all TERMIS members know in the spirit of ingenuity, regenerative medicine is a collaborative effort. Leadership in this field will come from individuals who are willing to work across disciplinary lines. A successful regenerative medicine initiative within a an institute and/or company requires the expert knowledge of scientists, engineers, physicians, researchers, and many others in a multidisciplinary effort focused through an initiative that provides the framework and resources to fully realize the commercial potential of a regenerative medicine based strategy. However, in the past tissue engineering companies typically did not try to develop early enough in-house expertise required to address the challenges of developing products which are placed in market segments that have economics of scale. Furthermore, usually companies did develop manual and labor intensive manufacturing/technology platforms to support phase I clinical trials. These technologies which usually are legacies from the academic roots of the developed regenerative medicine strategy, are often poorly suited to scale-up manufacturing of the products. To be successful in the future, companies developing regenerative therapies need to learn from both medical device and especially drug companies, that the manufacturing process needs to be based on economics of scale during clinical phase II and III trials. In addition, they should learn not to compress a broad spectrum of the required knowledge and expertise into a small number of staff. Instead they should perform a strategic assessment to find out which core competencies are desirable to maintain in-house and which ones can be outsourced. Most importantly, in the future a commercially successful market segment in regenerative therapy needs to have a broad product spectrum comprised of diverse product segments such as off the shelf and patient specific products (scaffolds, scaffold-cell constructs, matrices + growth factors etc.) as well as new and novel cell based services.

No doubt, regenerative medicine is one of the vanguards of the 21st century's biomedical sciences. We are on the cusp of a worldwide movement of activity in this rapidly growing field of health care that will lead to novel treatment concepts. In the spirit of ingenuity, regenerative medicine is a collaborative effort. Leadership in this field will come from individuals who are not only willing but also effectively bridging disciplines. Regenerative medicine will lead to the creation of fully biological or biohybrid tissues and organs that cannot only replace but ultimately will regenerate tissues and organs damaged by disease, injury, or congenital anomaly. The good news is that because of the economic potential of this new industry segment in the health care market, national initiatives to capture significant shares of this market are multiplying around the world and competition is mounting. Hence, all current and future TERMIS members should be proud to be part of this new and exciting developments and dynamics.

I look forward seeing our society playing a major part to shape this process.

Sponsors

NEWS from TERMIS-AP Chapter

Hai Bang Lee, PhD - Continental Chair

• TERMIS-AP has chosen the location of 2008 TERMIS-AP Chapter Meeting by Council Voting. The meeting will be held in Chinese Taipei on November 8-9th 2008 at Taipei International Convention Center (TICC). Meeting Chair: Prof. Ging-Ho Hsuie PhD, and Program Chair: Prof. Hsing-Wen Sung PhD.

• 8th Annual Meeting of Korea Tissue Engineering and Regenerative Medicine Society (KTERMS) will be held on June 2nd at Samsung Seoul Hospital, Seoul, Korea. 112 oral and poster, 3 foreign and 7 domestic invited speakers will be presented. Around 300 members will participate. President: Prof. Jung Man Kim MD, PhD, and Organizer: Prof. Kwang Won Kim MD, PhD.

• 7th Asian Symposium on Biomedical Materials (ASBM-7) in conjunction with the 10th Anniversary Meeting of the Korean Society for Biomaterials will be held on Aug. 20-23rd, Jeju Island, Korea. 350 oral and poster, and 35 invited lectures will be presented. Chair: Prof. Young Ha Kim PhD. Website: www.asbm7.org.

• 5th KFDA approved tissue engineered products is launching to the market on May 3, 2006 as commercial name of Autocell® (MCTT Inc. Ltd., Korea) for burn patients, which is cell spray system.

• Last year, around 110 cases of human clinical trial for emergency, research and commercialization were approved by KFDA for adult stem cell therapy in Korea using umbilical cord-derived hematopoietic stem cell and bone marrow derived mesenchymal stem cell.

• Around 5 regenerative medicine and tissue engineering companies have been publicly listed on KOSDAQ and outside the exchange market in Korea up to now: Medipost Inc. Ltd. (www.medi-post.co.kr), SewonCellontech Ltd. (www.sewonent.com), R&LBio Co. Ltd. (www.rnl.co.kr), RegenBiotech Co. Ltd. (www.regenbiotech.com), OrientBio Co. Ltd. (www.orient.co.kr), etc.

• 27th annual meeting of Japanese Society of Inflammation and Regeneration will be held on July. 11-12, Tokyo Japan. President: Prof. Shinichi Kawai.

• 9th annual meeting of Japanese Society of Tissue Engineering will be held on September 7-8, Koyto, Japan. President: Prof. Yasuhiko Tabata. Website: www.jste.org

• TESMA (Tissue Engineering Society of Malaysia) is organizing 1st National Tissue Engineering and Regenerative Medicine Scientific Meeting, 29-30th August 2006, Kuala Lumpur, Malaysia. Chairperson of Organizing Committee: Ruszymah Idrus MD PhD. Website: www.tesma.org

• TESMA is currently having discussion with the authorities (Government Bodies) on setting up a cGMP Laboratory for Tissue Engineered Products. We are discussing on the funding and certification. We hope by the end of the year if our clinical trial will take off!

Job Openings

Members of TERMIS have the opportunity to post job openings on the TERMIS website for one month FREE. If you are interested in posting a job opening, please send the job description to Sarah Wilburn at swilburn@termis.org. The TERMIS-SYIS will also post the job openings on the SYIS forum.

Genetic Engineering News (GEN)

In view of your membership with TERMIS a one year complimentary subscription to Genetic Engineering News (GEN) has been reserved for you.

Act now to receive 21 free issues of GEN for 2006.

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Update from TERMIS-EU

The TERMIS-EU Council recently met in Pittsburgh to sort out a variety of issues, including (i) identification of the most efficient way to change the legal status of ETES (ii) definition of mechanisms to organize the continental meetings, harmonised with TERMIS (iii) interaction with other European initiatives in the field of tissue engineering and regenerative medicine

Several benefits coming from the merging into a worldwide society are becoming apparent, including the coordinated sequence of annual meetings and the right for members to access the Tissue Engineering journal online.

We are happy to acknowledge that the structure of TERMIS-EU is getting consolidated. We are now getting ready to accept proposals by members on specific initiatives which can promote organization of our research community within Europe. Partial financial support for such initiatives would be available, based on revenues from membership fees collected at TERMIS meetings and from industrial sponsors.

I take the opportunity of this Newsletter to solicit proposals for 2010 and 2011 TERMIS-EU meetings, using the application form available through the website.

We are all looking forward to the upcoming meeting in Rotterdam (October 8-11, 2006)! (See information below.)

Ivan Martin
European Continental Chair

TERMIS EUROPEAN CHAPTER MEETING

The first European Chapter meeting of TERMIS will be held from 8-11 October 2006 in Rotterdam, The Netherlands. Although the deadline for regular abstract submission is closed, it is still possible to send in a "late poster submission" abstract. Visit the website for all details: www.etes2006.org.

Hope to see you all in Rotterdam!
Gerjo van Osch
Conference Chair

STUDENTS AND YOUNG INVESTIGATORS SECTION (SYIS)

At REGENERATE, the "Students and Young Investigators Section" (SYIS) was formalized. In continuity with the activities held in the World Congress, SYIS will actively participate in the EU Continental Meeting at Rotterdam (see above). Professional development and networking will be promoted by both scientific and social events. The activities planned at the Rotterdam Meeting, exclusive for TERMIS-SYIS members, include a professional development workshop, round table discussions as well as the opportunity to co-chair scientific sessions with some of the leaders in regenerative medicine and tissue engineering. The participation and interest of all SYIS members will outline the success of this initiative.

Catarina Moniz Alves
Students and Young Investigators Section (EU)

TERMIS-NA
Anthony Atala, M.D., Continental Chair

I am extremely enthusiastic about the opportunities for TERMIS-NA as a part of the new TERMIS global structure. We now have the ability to embark upon a new journey for our council and initiate activities that will bring great benefit to our members and to those organizations and individuals who participate with us.

Just a little over a month ago, TERMIS-NA hosted the first World Congress on tissue engineering and regenerative medicine in Pittsburgh, Pennsylvania. This event was hugely successful and opened many new opportunities for us to explore. Not only did the meeting attract over 900 participants from 40 countries and 5 continents, it also laid the foundation for a collaborative spirit among the TERMIS Councils and the hundreds of academic and corporate groups that participated.

As many of you know, the annual meeting is one of our most important assets next to the people who make up TERMIS-NA. We must maintain the momentum that began in Pittsburgh and build our annual meting to be the leading resource for the dissemination and sharing of information and ideas that will ultimately lead to patient therapies.

The 2007 TERMIS-NA Council meeting will be held June 13-17 in Toronto, Canada. Molly Shoichet will lead the scientific team who will identify, coordinate and implement the scientific program. Many of us in the industry have been blessed with good fortune, and I encourage you to become involved with this group. Please contact Sarah Wilburn, Molly Shoichet or myself if you can participate. I believe a true sign of a mature technology industry is a growing base of stakeholders that give back to and reinvest in the industry and greater community.

In addition to the 2007 meeting in Toronto, we have confirmed a date and location for the 2008 meeting. It will be held at the Hyatt in LaJolla, California, December 6-10, 2008. We will not hold an annual meeting in 2009 but will support the next World Congress in Seoul, Korea. With this said, the Board of Directors would like to announce that they requesting proposals to host the 2010 and 2011 annual meetings in North America. Interested hosts should contact Sarah Wilburn at swilburn@termis.org for more information regarding the RFP process and its required contents.

I look forward to interacting with all of you over the course of the next several months. I welcome your feedback and hope that you will be able to become more involved with us as we build the organization for the future.

All the best,
Tony Atala
TERMIS-NA Continental Chair

Features on Tissue Engineering Laboratories

Shanghai Tissue Engineering Center

Shanghai Tissue Engineering Center was established in 1997. It includes two parts, one is called Shanghai Key Laboratory of Tissue Engineering which is located at Shanghai 9th People's Hospital, and the other is called Shanghai Tissue Engineering Research & Development Center which is located at the Caohejing Economic Development Zone in the west part of the city. The Key Laboratory mainly focuses on the basic research and idea development of tissue engineering, such as the isolation, establishment and differentiation of adult and embryonic stem cells, the investigation of tissue specific micro-environment in stem cell differentiation, and the study of the effects and the mechanisms of biomechanical loading in tissue formation. The R&D Center is mainly works on the translational research and clinical trials.

Prof. Yilin Cao is the chief director of the center. Currently, the whole center has eight principal investigators, more than ten staff members and nearly 50 postgraduates. The major research fields of the center can be divided into seven parts, including bone engineering, cartilage engineering, tendon engineering, skin engineering, stem cell research (adult and embryonic), biomaterial development, and bioreactor development. The center possesses a large cell culture room for regular animal cell culture, a GMP laboratory only for human cell culture and clinical trails, a molecular biology lab, a histology lab, and an animal facility. The animal facility had a variety of animals from small ones like mice, rats, and rabbits, to large ones like dogs, sheep and pigs. The center also owns some large equipment such as Micro CT, Epics Altra flow cell sorting system, laser capture microdissection system, confocal microscope, fluorescent microscope, ultracentrifuge, PCR reactor and gel image analysis system, etc. In the last nine years, the center received national and regional funding in total about 100 million RMB (nearly 12.5 million USD$). Last year, the National Tissue Engineering (Shanghai) Research and Development Center was set up by the national administration, Shanghai government, several universities and venture capitals. The total investment is about 150 million RMB (nearly 18.7 million USD$). The mission of the new national center is to develop and commercialize the tissue-engineered products.

Under the directing of Prof. Yilin Cao, the center has made many important progresses. We have successfully constructed tissue engineered bone, cartilage, skin and tendon to repair the related defects in large mammals. In addition, tissue engineered bone has been applied in clinic and achieved very satisfied results. We have also achieved progress in blood vessel, cornea, and nerves engineering. In basic research, our center has established a human embryonic stem cell line and now is working on differentiating these cells into vascular endothelial cells, neuron and chondrocytes. Recently, we have successfully constructed tissue engineered cartilage, tendon and skin in bioreactors. This step is essential for the future commercialization of tissue engineering products. The successful works in large animal studies and clinical trials demonstrated the potential power of this approach in tissue/organ regeneration.

With those successes, the center is getting known by the international society in this field. Prof. Yilin Cao has been invited to give keynote lectures in many international meetings. He has been appointed as the committee member of several international magazines, such as Tissue Engineering, Biomaterial and British Journal of Plastic Surgery. The center has successfully held the 8th TESI Annual Meeting in Shanghai last year. Prof. Yilin Cao was selected as the TERMIS-AP Council Member and the TERMIS Special Congress Chair on that meeting. Recently, we have established several international collaborations with research groups in Japan, Korea, Europe and United State. We hope to have more collaboration with other groups in tissue engineering field.

THE 3B´S RESEARCH GROUP

University Of Minho, Braga, Portugal

One Of The Major EU Based
Tissue Engineering Research Groups

The 3B's Research Group (Biomaterials, Biodegradables and Biomimetics, www.dep.uminho.pt/3bs) of the University of Minho is a Research Unit coordinated by Prof. Rui L. Reis. It is a unit of Excellence in the Portuguese Scientific system, as a result of evaluations by international experts panels. Its Labs are located in the two campi of the University of Minho in Braga and Guimarães in the beautiful Northern part of Portugal.

The 3B's Research Group aims at developing new materials to be used on a range of biomedical and environmental applications. Its research is focused on the development of new polymeric and composite BIOMATERIALS from natural origin and mainly from renewable resources (starch, chitin, chitosan and its derivatives, casein, soy, algae, and others). Several BIODEGRADABLE systems are been studied for applications related with bone replacement/fixation/ cements, tissue engineering scaffolding and tissue regeneration, systems for controlled release of drugs or bioactive agents, and

cont...

Features on Tissue Engineering Laboratories

THE 3B´S RESEARCH GROUP cont.

environmental degradable plastics. The group activities apply a research approach on which the investigators always try to learn from nature to understand its function and mimic them, by design innovative BIOMIMETIC processing routes and materials. All the research is in the interface between materials science engineering, chemistry, life sciences and biotechnology.

The 3B's Research Group has a long experience in the development of scaffolds from natural origin biodegradable polymers using a wide range of non-conventional processing methodologies: it is in fact one of the groups in the world with more publications in the field of scaffolds for tissue engineering and the development of the respective innovative processing routes. In addition Rui L. Reis and his group were the pioneers on proposing starch-based materials for applications related to bone orthopaedics such as bone replacement, bone cements, tissue engineering scaffolds and carriers for the controlled release of a range of bioactive agents. The group is also involved in development of new biodegradable materials and controlled release strategies, using other natural origin materials like casein, soy, silk fibroin, collagen, marine algae, chitin, in many cases combined with conventional synthetic biodegradable polymers (e.g. polycaprolactone, poly (lactic acid), etc).

At the present moment the Research Unit is composed of around 73 researchers (4 staff, 19 Post-docs, 36 PhD students and various research students and technicians/managers of large projects) from different origin, namely with nationalities from the following countries 18 different: Portugal, Spain, Sweden, Germany, Poland, Italy, Cuba, China, Bulgaria, Brazil, Germany, India, Colombia, Belgium, Korea, Ireland, UK, and Turkey. This is not typical at all in any other research group in Portugal and in most of the European Tissue Engineering research groups. The researchers have a multidisciplinary background including, Mat. Sci. Eng., Polymer Eng., Chem. Eng., Chemistry, Biological Eng., Textile Eng., Biochemistry and Biology, Applied Biology, Medicine and Dentistry, among others. There is very good gender balance with around 51 % of the researchers being female.

The 3B's Research Group has a strong history of cooperation with the biomedical industry, being well known internationally in the field of tissue engineering for its unique interdisciplinary research approach that goes from polymer development up to the in-vivo testing in animal models. The main research areas active in the group at the present are:

- Tissue engineering (TE) of bone, cartilage and osteochondral defects
- Production of porous biomaterials and TE scaffolds, including rapid prototyping approaches
- Systems for the controlled release of bioactive agents
- Development and modification of natural origin materials
- Polymer science applied to the development of new materials
- Characterization of biomaterials under dynamic loads
- Behavior in simulated physiological solutions and degradation mechanisms
- Processing and characterization of biodegradable systems including the development of bioactive and bioinert composites
- Surface modification of biomaterials and TE scaffolds, including patterning (nano and micro)
- Bioactivity, biomineralization, biomimetic coatings and bioceramics
- Biomaterials-protein interactions
- Hydrogels and novel degradable bone cements
- Nanobiotechnology applied to regenerative medicine
- Smart and responsive materials for tissue engineering and sustained release
- Membranes and wound dressings of natural origin
- Biocompatibility and immunological responses to biomaterials
- Adult Stem cells: Isolation, culturing and differentiation
- Co-culture systems for tissue engineering applications
- In-vivo tests for biocompatibility and TE constructs functionality assessment

Features on Tissue Engineering Laboratories

THE 3B´S RESEARCH GROUP cont.

On most of these areas the group collaborates with many research institutions around the world (USA, Japan, Singapore, Canada, Israel and many different European Countries). Details on our collaborators can be found on the 3B´s Research Group web site.

MAIN PROJECTS ONGOING AT THE 3B´S RESEARCH GROUP AND ITS PARTNER INSTITUTIONS

Actually, the 3B's Research Group is the Portuguese group coordinating more EU projects in all scientific areas, being the only one coordinating a Network of Excellence (NoE) within the sixth frame-work of the European Union (FP6). The reader can find below information on the major projects. At the present moment the 3B´s coordinates grants with a value over 30 MEuros, being the U. Minho funding around 9 MEuros. There are typically always positions opened for students and post-doctoral fellows. Just look in the 3B´s web site for details.

EXPERTISSUES – Novel Therapeutic Strategies for Tissue Engineering of Bone and Cartilage Using Second Generation Biomimetic Scaffolds.
Network of Excellence (NoE), Coordinator: Rui L. Reis (U. Minho)
More details on the project and the partnership in www.expertissues.org

EXPERTISSUES The NoE EXPERTISSUES joins together 20 different Institutions from 13 different European countries and has a total budget of about 7.3 ME. The main aim is to create a European Center of Excellence in Tissue Engineering and Regenerative Medicine that will have its initial headquarters in Minho with branches in all the other 19 Institutions.

The main aim of the EXPERTISSUES network of excellence (NoE) is to combat and overcome fragmentation of European Research, specially on the field of Tissue Engineering of Bone and Cartilage. The network brings together Europe's leading academic centers and several complementary industrial players in a multi-disciplinary consortium to conduct and structure research that is able to compete in the international arena. The network joins together the critical mass and all the expertise needed to be an unavoidable world reference on the topic of tissue engineering of bone and cartilage. The main objectives of this NoE are to be able to integrate and create all the knowledge that will lead to the breakthroughs that are required in the field of tissue engineering and regeneration. The network activities are organized through a Joint Programme of Activities (JPA) structured in three levels: Research (JPR), Integration (JPI), Spreading (JPS) and Management.

ALEA JACTA EST THE DIE IS CAST MARIE CURIE ACTIONS

ALEA JACT EST - Shaping the Future of a New Generation of Hybrid Human Resources for the Tissue Engineering of Connective Tissues.
Marie Currie Early Stage Training (EST), Coordinator: Rui L. Reis (U. Minho).
More details on the project and the partnership in www.aleajactaest.org

Rui L. Reis and the 3B´s – U. Minho also coordinates the Marie Currie Early Stage Training (EST) Network "ALEA JACT EST - Shaping the Future of a New Generation of Hybrid Human Resources for the Tissue Engineering of Connective Tissues". With a total budget of 2.6 ME, this project pretends to form early stage post-graduation training program at the PhD level. The aim is to create a multi-site PhD program (3 years) with a clear and strategic European dimension, operational in all the seven different Institutions (with 6 of them awarding degrees).

REGENERATE World Congress on Tissue Engineering and Regenerative Medicine

2006 Regenerate World Congress

Nearly a thousand of the world's brightest minds dedicated to making spare and replacement human body parts gathered in Pittsburgh last month for the 2006 Regenerate World Congress on Tissue Engineering and Regenerative Medicine.

Some 850 biotech engineers, scientists, physicians, entrepreneurs and students attended the scientific conference, over one third of them representing 40 nations and five continents. More than 500 research papers, lectures and poster presentations were delivered over the course of four days. Participants discussed mind-boggling and highly-sophisticated advancements, both large and small, in their scientific universe of helping the human body repair itself. Complimenting the scientific presentations was an array of activities including a 40 company exposition, pre-congress tutorials focused on Clinical Translation, plenary sessions highlighting tissue engineering centers from around the world as well as the membership and board activities of the tissue Engineering and Regenerative Medicine International Society (TERMIS).

In addition, the annual meeting for the Society of Biomaterials followed the World Congress bringing another 1200 participants to Pittsburgh. The World Congress and the Society overlapped programming for one day allowing attendees at both conferences to cross-over and attend sessions of mutual interest.

The combined meetings drew more than 2000 people from one of the most dynamic ad far-reaching gatherings…to advance tissue engineering/regenerative medicine technology…that will benefit patients worldwide. The next Regenerate international Conference and Exposition is scheduled for June 13-17, 2007 in Toronto, Canada. For information on this event please contact LaShon Jackson at ljackson@ptei.org.

Features on Tissue Engineering Laboratories

THE 3B´S RESEARCH GROUP cont.

The complexity of the field of Tissue Engineering is to make dramatically different components, such as materials, drugs and living cells to make part of a same reality. Alea Jacta EST (the die is cast) is a project under the Marie Curie Host Fellowships for Early Stage Research Training (EST) aiming at the formation of a first generation of multidisciplinary or "hybrid" researchers. These "hybrid" researchers should be able to deal with all the future challenges in the scope of tissue engineering and regenerative medicine at the end of their training, by understanding biological, chemical, physical and materials science phenomena. For that purpose, Alea Jacta EST is establishing a joint PhD training program, gathering the expertise of the different partners in each different cutting-edge topic related to the different fields relevant to Tissue Engineering. By fostering synergies of the different partners, it enables a broader background, research facilities and capabilities to the students. The students have the opportunity to work and contact with different research institutions (and in a company) all of them leaders in their fields.

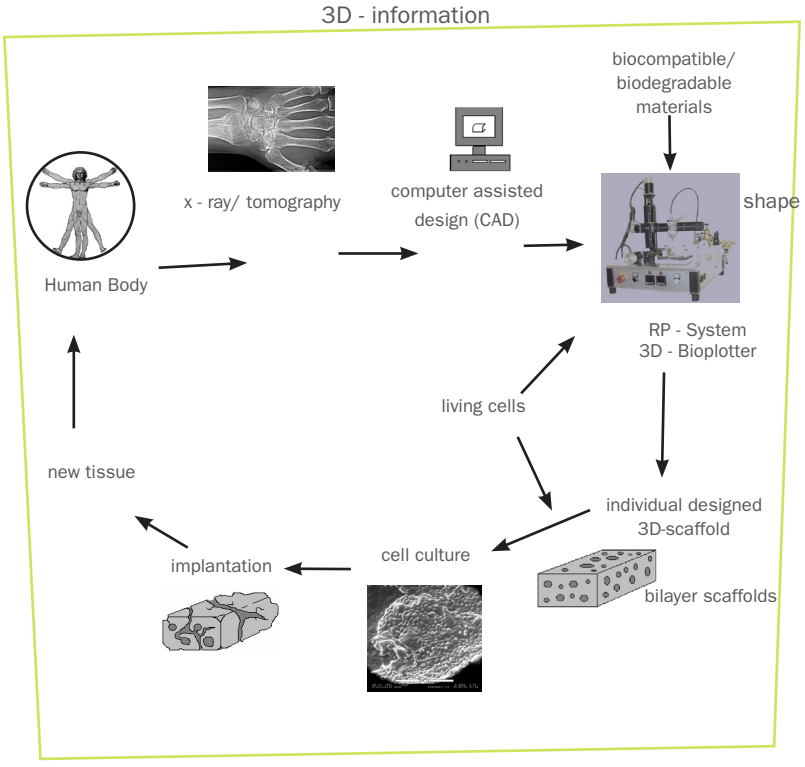
Hippocrates

HIPPOCRATES - A Hybrid Approach and Cartilage Tissue Engineering using Natural Origin Scaffolds, Progenitor Cells and Growth Factors.
Specific Targeted Research Project (STREP), Coordinator: Rui L. Reis (U. Minho).
More details on the project and the partnership in www.hippocratesproject.org

HIPPOCRATES is a major Specific Targeted Research Project (STREP) with a funding of around 3 MEuros that has 7 partners, being two industrial, from 5 different EU countries. It is one of the largest STREP projects on Tissue Engineering running in Europe.

The aim of the HIPPOCRATES project aims to provide new tissue engineering technologies for future therapeutic treatments. The scientific and technical work plan of this project is clearly oriented by the development of tissue engineering products that can be used for a bone, cartilage or an osteochondral tissue engineering strategy.

The project is developing new advanced functional materials that are needed for improved quality of life of thousands of patients suffering from cartilage or bone tissue, and osteochondral loss or malfunctioning. Natural origin innovative scaffolds such as chitin/chitosan are being used as a research object for bone and cartilage treatments. Ceramic scaffolds for bone tissue engineering are obtained from mineralized red algae. For the osteochondral approach, specific technologies are being developed to produce complex bi-material constructs. An all range of adequate processing techniques to obtain suitable scaffolds to be used on cartilage, bone and osteochondral tissue engineering are being developed. One of the main innovation is the development and use of specific software packages for designing patient specific scaffolds that are being combined with the production of the scaffolds by means of 3D plotting methodologies (both from gels and melts). Other techniques include melt based processing and solvent based technique. The scaffolds are also being loaded with a range of growth and differentiation factors, including several bone-morphogenetic proteins (BMPs) and other that have been shown to have some osteogenic, chondrogenic and angiogenic potential. Primary cells and progenitor cells obtained from animals and human patients, such as adipose derived adult stem cells, are being combined to develop tissue engineered products. Specific cell culturing methodologies (e.g. bioreactors) are successfully under way. At a later stage, in vivo functionality assessment experiments will assure the future applicability of the HIPPOCRATES proposed products.



Features on Tissue Engineering Laboratories

THE 3B´S RESEARCH GROUP cont.

InVents - An Integrated Series of Events for High-level Training on Biomaterials, Tissue Engineering, Controlled Drug Delivery and Related Emerging Fields
Marie Curie Series of Conferences (SCF), Coordinator: Rui L. Reis (U. Minho).
More details on the project and the partnership in www.inventscience.org

InVENTScience InVENTS is an ambitious series of scientific events, approved under the scope of the Marie Curie Actions (EU/FP6/HRM), with a total funding approaching 0.5 MEuros. This rather inventive series of events, is the only of its kind within the emerging fields of biomaterials, tissue engineering and related areas approved by the EU. InVENTS ambition is to promote scientific discussion by joining leading experts and a selected number of students, in key scientific areas that deal with biomaterials, tissue engineering, regenerative medicine and drug delivery applications. InVENTS aims to promote high quality science by addressing the latest evolutions in the most current challenging research topics during six Marie Curie Conferences (MCC), all of them held in different locations in Portugal (see following Table), and three Marie Curie Practical Training Courses (MCPTC).

In all of the InVENTS series there are scholarships available to encourage the participation of relevant researchers, especially young ones, from all around the world. The first meeting in the InVENTS series was just held on Madeira, a beautiful Portuguese Island, with great success. Many world leaders on the Tissue Engineering field, strongly involved in TERMIS activities, have been present (see details on the web site).

MCC1 1st – 5th June 2006	Funchal	New developments on polymers for tissue engineering: replacement and regeneration
MCC2 2-6th October 2006	Algarve	Recent advances on polymeric based systems for controlled delivery of bioactive agents
MCC3 4-8th June 2007	Óbidos	Biomineralisation of polymeric materials, bioactive biomaterials and biomimetic methodologies
MCC4 8-12th October 2007	Algarve	Biocompatibility evaluation and biological behaviour of polymeric biomaterials
MCC5 5-9th May 2008	Funchal	Synthesis and applications of self-assembling materials at nano-scale
MCC6 6-10th October 2008	Porto	Stem cells from the Petri dish to the clinical application

Other relevant projects coordinated by 3B´s – U. Minho

An INTERREG project with Galicia, PROTEUS, coordinated by Rui L. Reis, was approved in the end of 2005, with a total funding of 1.4 ME. This project pretends to develop new materials for different applications (with a special emphasis on biomedical uses a, tissue engineering and controlled release) using marine resources as raw materials supplier, including algae, shells, crustaceans, etc.

The 3B's Research Group has also seen approved to large Portuguese grants to renew its park of scientific equipments. The acquisition of these new equipments should be concluded until the end of the year.

Features on Tissue Engineering Laboratories

THE 3B´S RESEARCH GROUP cont.

3. The New home for the 3B´s Research Group

The execution of all the different projects and growth on human resources requires proper facilities, and the lack of available space has been one of the greatest drawbacks for developing high quality scientific research. In 2005, important developments have been achieved towards the expansion of available space. The funding to construct a building to host only the 3B´s activities has been obtained. It will be 3.600 m2 facility, to be located in a science park – AvePark (located in between Braga and Guimarães in Taipas) with all the Labs needed for cutting-edge tissue engineering research. It will have all the required facilities for materials, biology and animal experiments required by the research of the group. It is prepared to host around 150 full time researchers and technicians.

One of the floors of the building will host a spin-off of the group that is on its final preparation steps. As a consequence of EXPERTISSUES, the building will also be the headquarters of the European Institute of Excellence on Tissue Engineering and Regenerative Medicine, which will have branches on 20 different locations around Europe. It is, consequently, expected that researchers from most of these institutions will also carry out part of their research, when needed, in this new state of the art facility.

4. The Director of the 3B´s Research Group

Rui L. Reis is 39 years old and is an Associate Prof. at the Dept. of Polymer Engineering and Director of the 3B's Research Group – Biomaterials, Biodegradables and Biomimetics, a Research Unit of excellence based in U. Minho, Portugal. His main area of research is the development of biomaterials from natural origin polymers for a range of biomedical applications, including specially tissue engineering scaffolding and drug delivery carriers. His group is one of the most interdisciplinary in the field, going from work with stem cells and its differentiation and expansion up to the in-vitro and in-vivo assessment of the functionality of the developed constructs.

He has been responsible for several co-operation programs, with Universities and Companies in UK, The Netherlands, Spain, France, Finland, Germany, Italy, Turkey, Singapore, USA, Canada, and Japan. At the present moment he is the co-coordinator of 4 major EU research projects. He is also the main responsible for several other projects funded by Portuguese, European and American biomaterials and polymeric industries. At the present is his the principal investigator (PI) of grants totalising around 30 MEuros. As a result of these projects he is presently an advisor of more than 65 post-graduation researchers (Post-docs and PhD students) coming from all over the world and also directs the work of 3 other faculty members. Rui L. Reis has also been awarded several prestigious scientific prizes. He is the President of the Portuguese Society for Stem Cells and Cellular Therapies. He is on the Board of Governors of the European Soc. for Artificial Organs (ESAO) where he coordinates the workgroup on Tissue Engineering. He was on Board of the European Tissue Engineering Soc. (ETES) and, after being involved on the merging with TESI, is on the EU board of TERMIS – Tissue Engineering and Regenerative Medicine International Society. He is also the Chair of the Special Interest group on Tissue Engineering of the Society for Biomaterials (USA) and has been just elected the chair of the Orthopaedic Special Interest group of the Society for Biomaterials (USA) for the coming year.

He has edited several books and journal special issues, organized different meetings and symposiums, and is the Editorial Board of many different journals. Rui L. Reis is an author of around 150 papers on scientific journals, around 100 book chapters in books of international circulation and more than 480 communications in conferences, including around than 70 plenary or invited talks delivered worldwide.

Features on Tissue Engineering Laboratories

Orthopaedic Tissue Engineering at GTEC

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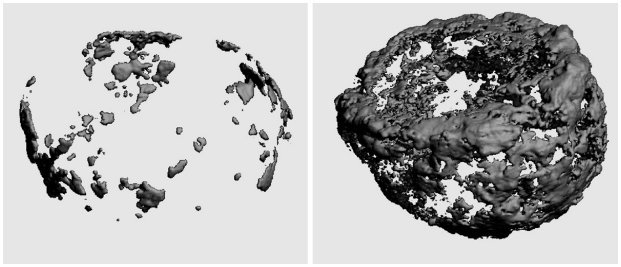
Musculoskeletal disorders are the most common cause of severe long-term pain and physical disability worldwide with an estimated cost to society of $215 billion per year in the USA alone. As the average age of the global population increases, the prevalence of chronic disabling musculoskeletal conditions and injuries will continue to grow. The goal of our GTEC orthopaedic tissue engineering research program is to develop enabling technologies that address barriers to functional restoration of musculoskeletal tissues with a specific focus on bone and cartilage. Described below are a few representative GTEC projects.

Cell-Biomaterial Interfaces and Tissue Constructs for Bone Repair

Cell adhesion to adsorbed extracellular matrix proteins and adhesive sequences engineered on synthetic surfaces plays critical roles in biomaterial, tissue engineering, and biotechnological applications. Cell adhesion to these adhesive motifs is primarily mediated by integrin receptors. In addition to anchoring cells, integrin binding activates signaling pathways regulating cell survival, proliferation, and differentiation. While tethering short adhesive peptides derived from matrix ligands (e.g., RGD for fibronectin) promotes cell adhesion and function in several cell systems, these biomimetic strategies are limited by reduced biological activity compared to the native ligand, lack of specificity among integrins, and inability to bind non-RGD integrins. These limitations are of particular importance to tailoring specific cellular responses since different integrins trigger different signaling pathways. We have engineered biointerfaces that present adhesive ligands that mimic the secondary and tertiary protein structure of fibronectin and type I collagen. These surfaces convey integrin binding specificity, focal adhesion assembly and signaling as well as bone and muscle cell adhesion, proliferation, and differentiation. Furthermore, these interfaces promote bone formation and osseointegration of titanium implants into host bone. These biomolecular engineering strategies provide a basis for the rational design of robust biointerfaces that tailor adhesive interactions and elicit specific cellular responses for the development of bioactive implant surfaces, scaffolds for enhanced tissue reconstruction, and growth supports for enhanced cellular activities.

As a complementary approach, genetic engineering has been applied to engineer cells to express the Runx2 transcription factor that induces bone tissue formation. These genetically engineered cells exhibit enhanced bone-specific gene expression, matrix mineralization, and in vivo bone formation and represent a promising cell source for bone tissue engineering approaches targeting the repair of bone defects.

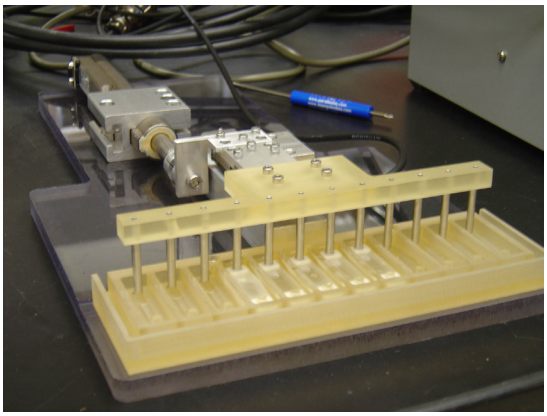


CONTROL RUNX2

Runx2 engineering enhances in vivo mineralization of bone marrow stromal cell-PLAGA constructs.

Marrow Stromal Cell Differentiation to Promote Tendon/Ligament Regeneration

Tissue engineered therapies employing autologous cell transplantation offer distinct advantages to traditional methods of tendon and ligament reconstruction by reducing donor site morbidity while invoking minimal immune response. Our focus here is on the development of novel, injectable, biodegradable synthetic materials as carriers for marrow stromal cells (MSCs) for tendon and ligament tissue engineering applications. The overall goal of this project is to optimize material parameters to improve cellular differentiation toward the fibroblastic phenotype and, thus, increase production of appropriate extracellular matrix in localized defect areas. One set of current studies centers on culturing constructs of MSCs



OPF hydrogel constructs in the cyclic tensile culture system

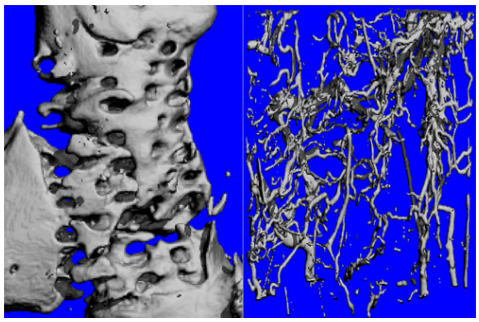
Features on Tissue Engineering Laboratories

Orthopaedic Tissue Engineering at GTEC, cont...

and the biodegradable hydrogel oligo (poly(ethylene glycol) fumarate) (OPF) under cyclic strain in a custom-designed bioreactor in order to determine how biomaterial properties (stiffness, presence of adhesive peptide sequences) affect differentiation of the encapsulated cells. Given the significant need for alternative tendon/ligament replacements and the relative ease of MSC harvest and expansion, information gained from these experiments regarding promoting the differentiation of progenitor cells to fibrous connective tissues may have an important impact on future clinical interventions.

Micro-CT Imaging of Construct Integration

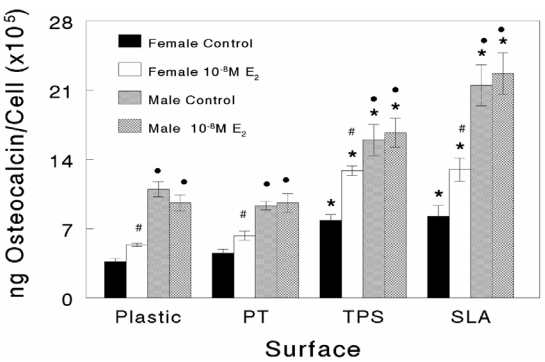
Microcomputed tomography (micro-CT) imaging has become the standard method to quantify changes in the microstructure of trabecular bone associate with skeletal fragility and osteoporosis. We have extended the use of micro-CT analysis to evaluate porous scaffold microarchitectures and the integration of tissue-engineered constructs. Most recently, we have employed contrast agents to obtain high resolution 3D images of vascular ingrowth and other soft tissues such as articular cartilage. To evaluate functional bone regeneration in vivo, a rat femoral segmental defect model has been developed that allows for longitudinal micro-CT analysis. A variety of composite scaffold systems have been quantitatively evaluated in this challenging model and three strategies of scaffold augmentation are currently being pursued. First, the controlled delivery and release of natural and recombinant proteins is being tested. We have recently shown for example that co-delivery of two growth factors more effectively induces bone defect repair than either factor alone and that delivery of proteins that promote early vascular ingrowth significantly improve the rate of subsequent bone union. The second augmentation strategy is coat porous degradable polymer scaffolds with recombinant adeno-associated virus (rAAV) that mediate in vivo gene transfer. This approach has recently been shown to effectively promote bone allograft repair by stimulating bone formation, remodeling, and revascularization. Finally, cell delivery strategies for bone repair are being investigated using a variety of cell sources, including amniotic fluid derived stem cells.



Bone and vascular ingrowth into PCL/TCP scaffolds combined with platelet rich plasma in a rat segmental defect model

Orthopaedic and Dental/Craniofacial Therapeutics

Another primary focus is to study how bone and cartilage cells are regulated in order to better design materials and therapeutic strategies for tissue regeneration, repair, and integration. Research goals include: (1) understanding regulation of osteoblasts and chondrocytes by steroid hormones and the membrane-associated receptor mediated pathways that are involved; (2) understanding regulation of these cells by growth factors, biomechanical and biophysical stimuli and how these signaling pathways cross talk with those used by steroid hormones; (3) identifying surface structural components (micron scale, submicron scale, and nanoscale) that control how these cells interact with their substrates; and (4) using basic information to design novel materials for use clinically. Methods used in the laboratory include cellular and molecular biology, materials science, and in vivo models. Our interest is to develop new materials based on biological design principles for use in dental and orthopaedic applications. To do this, the group develops appropriate animal models that are well controlled and well characterized. Current projects include assessment of osteoinductive bone graft materials and design and development of cartilage repair materials. Techniques include microsurgery, histomorphometry, immunohistochemistry, molecular biology and in situ hybridization. The overall goal is to design clinically relevant studies with sufficient power to determine effectiveness of a material or therapeutic using quantitative measures. In addition, in vitro studies in the laboratory are performed to develop rapid high throughput assessments of cell/material interactions that are predictive of in vivo effectiveness. Using this approach we have been able to show that cells from male and female humans and animals exhibit sex-specific responses to biomaterials and are regulated in sex-specific ways by local and systemic factors. These observations demonstrate the importance of understanding basic biological mechanisms in the design of tissue engineered medical products.



Sex specific responses of male and female rat osteoblasts to orthopaedic materials and systemic hormones

A Registry Of Clinical Trials For Tissue Engineering Products And Processes

David Williams
Director of the UK Centre for Tissue Engineering,
The University of Liverpool, UK

Much has been written during the last few years about the precarious nature of developments in tissue engineering products and processes, where, in spite of massive industrial and intellectual investment, there have been very few commercial and clinical successes. There are many reasons for this (1,2,3), ranging from regulatory and reimbursement issues to difficulties with basic science and logistics of bioprocessing. However, there are signs that substantial progress is now being made and it is becoming clear that tissue engineering products and processes are starting to reach patients in a serious manner. Bearing in mind that tissue engineering is concerned with the facilitation of tissue regeneration rather than the replacement of compromised tissues by the synthetic manufactured products of conventional medical technology, a vital point is now being reached in the transition of tissue engineering form laboratory to clinic. This point reflects the question of how clinical trials should be undertaken and how clinical experiences should be reported and documented. The evolution of the pharmaceutical industry over the last 50 years has led to a well defined, internationally agreed, set of procedures for the clinical trials of drugs, aimed at establishing safety and efficacy, which are generally very successful, notwithstanding the occasional difficulties (4). Although not standardised in quite the same way, the performance of implantable medical devices may be evaluated by series of clinical trials and post-market surveillance procedures with generally good outcomes. The products and processes of tissue engineering are quite different to those of either of these sectors, as reflected by the regulatory procedures that are still evolving. The question is therefore arising as to how these early clinical experiences with tissue engineering (and regenerative medicine more broadly) should be conducted. The chances are that the introduction of clinical trials will be ad hoc and uncoordinated, and very unlikely to yield any common approach to the complex issues that are involved.

This situation has been recognised by TERMIS, and an international initiative to explore how these issues can be addressed at this early stage is now under development. Specifically, over the next six months, a framework for the introduction of a registry of clinical trials for tissue engineering products will be drawn up by an international group headed by Dr. Jay Vacanti and myself, as announced at the April meeting of the Society in Pittsburgh, USA.

This group has noted that, whilst there is, as far as we are aware, no multi-centred registry in tissue engineering and regenerative medicine as yet, there is considerable experience in other sectors of medical technology and therapies. Both orthopaedics and cardiology have substantial experience. We should bear in mind that there were two over-riding and quite separate factors that led to registries or databases with medical devices. The first was the need to have an efficient system for contacting patients or their families in the event that a product, usually a critical implantable medical device such as a heart valve or a pacemaker, was found to be suffering a systematic failure mode such that patient's lives were at risk. These registries, run by the companies, were obviously patient specific, but with very little data stored other than contact details, and no analysis of such databases could be placed in the public domain. The second was the need to enhance the power of clinical trials, or more importantly post-market surveillance procedures, in order to detect poorer than expected performance of a device or treatment at a much earlier date than would be possible with small numbers of patients, and to identify trends of performance characteristics. It is this second reason that is most relevant to tissue engineering products.

Total joint replacement (particularly hips and knees) have been the focus of the most important registries. These were first established in Scandinavia, initially in separate countries and more recently combined, where the experience has been profound in identifying devices and materials that have performance problems at a very early stage. This practice has spread across Europe, with increasing sophistication in the technology used in them. For example, the Institute for Evaluative Research in Orthopaedic Surgery at the University of Bern, Switzerland, have published the details of their Clinical Documentation Technology System, a web-based system that can be used on a regional, national or supranational basis (5, 6).

The UK has a national heart valves registry (7), which is more modest as far as technology is concerned, using un-networked stand alone computers to record confidential patient data. It has details of over 100,000 patients with heart valves, since the mid-1980's. It is funded by the Department of Health and managed by an academic department in a major teaching hospital which produces a detailed annual report.

Some international registries are organized on behalf of, or funded by, the commercial sector, including the International Intraocular Lens and Implant Registry (8). Others are operated by societies, usually with a more limited set of objectives. The Society of Thoracic Surgeons has a port access international registry (9) and the International Society for Heart and Lung Transplantation is running a database on the performance of mechanical circulatory support devices (10). In both cases, details and information about the database are published in the society journal.

A little closer to regenerative medicine, some societies are collecting data on autologous stem cell transplantation. The European Group for Blood and Marrow Transplantation (EBMT), in conjunction with the European League Against Rheumatism (EULAR) have collected and analyzed data from patients with severe systemic sclerosis that have been treated by haematopoietic stem cell transplantation in one of the several European phase I-II studies over a 6 year period (11) and the outcome was very helpful in determining the nature of subsequent prospective randomized trials.

A Registry Of Clinical Trials For Tissue Engineering Products And Processes *cont.*

Based on the experiences and precedents with implantable medical devices, the TERMIS group will be identifying the parameters that could be included in an international registry for tissue engineering clinical trials. The issues which have to be addressed at an early stage are those which concern the definition of the precise scope and objectives of a TERMIS registry, initially by identifying a group of products and procedures which are amenable to being included in a registry, and identifying what data should be included in, and the nature of the outcomes and endpoints that would be addressed. The starting list should include examples of different formats of tissue engineering, including commercial autologous cell procedures, non-commercial autologous procedures and in situ tissue engineering and commercial allogeneic products. This initial exploratory study will also address information technology, ethical / confidentiality issues and financial aspects.

Perhaps the most important aspect here is whether the registry should be solely concerned with a database of clinical trials, with information about the broad metrics and generic details of these trials, or whether it should include actual data from the patients within the trials. It is likely that it would start in the former mode and possibly develop into the latter in due course.

It is very important that this TERMIS group interact with as many academic, clinical and commercial teams as possible over the next few months, and the leaders of such teams are invited to contact me (dfw@liv.ac.uk) to discuss this initiative.

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Free Online Access to Tissue Engineering

The online version of the journal, Tissue Engineering, the official journal of TERMIS, is now available for free to members only. The online journal can be accessed 24 hours a day, 7 days a week by logging on to the online journal website, http://www.termis.org/journal.php.

All members of TERMIS have been issued a username and password to access the online version of the journal. If you are experiencing problems logging on to view the online journal or have any questions, please contact Sarah Wilburn either by email at swilburn@termis.org or by phone at +1 (410) 931-7838.

Regenerative Medicine Online Journal Package
Mary Ann Liebert Publishers, Inc. is providing TERMIS members with the opportunity to purchase a Regenerative Medicine Online Journal Package that includes the following journals:

Tissue Engineering
Rejuvenation Research
Stem Cells and Development
Cloning and Stem Cells

The Online Journal Package can be purchased for $295.00. If you are interested in ordering the journal package, please check the corresponding box that is included within the TERMIS online membership form.

Encourage Your Institution to Subscribe to the journal, Tissue Engineering.

On page 17 is a library recommendation form. If your institution does not currently subscribe to the journal, Tissue Engineering, we ask that you please complete the library recommendation form and fax to your institution's librarian encouraging them to subscribe to the journal today. Your institution's library can benefit in subscribing to Tissue Engineering by providing a publications outlet for yourself and other colleagues within the field of tissue engineering keeping you up-to-date with the latest papers and research. The journal now offers an online version, which offers convenience and ease of accessibility.

Please take a moment to complete the form and fax to your librarian today!

TERMIS Membership

How to Become a Member of TERMIS:

Membership to TERMIS is open to individuals who are interested in the field of tissue engineering and regenerative medicine and support the mission of the Society.

There are two (2) ways to become a TERMIS Member:

1. Attend a TERMIS World Congress or a Chapter Meeting. By attending a TERMIS meeting, you automatically become a member or renew your membership until the end of the following year.

Example: You attend either the World Congress in Pittsburgh or the TERMIS-EU Chapter meeting in Rotterdam in 2006. You are automatically a member of the Society until December 31, 2007. If you then attend any of the Chapter meetings in 2007, you automatically remain a member until December 31, 2008, and so on.

2. Pay the Annual Dues.
Dues have been structured to encourage participation by students, in particular, as follows:

a. Regular Membership (annual dues: $100.00) – Any individual who does not qualify as a Student Member.

b. Student Membership (annual dues: $25.00) – Any individual, who is engaged as a full-time graduate or undergraduate, in a university or college program and is actively involved in research in the field of tissue engineering and regenerative medicine. A copy of your student ID needs to be presented at the time of joining the Society.

The individuals residing within the countries that have been identified as Emerging Countries within the Continental Chapters are exempt from paying membership dues. Even though dues will not be collected, you must complete the online membership form.
Membership Benefits

How TERMIS Membership Benefits You:

1. Free online access to the Society's official journal, Tissue Engineering, and reduced subscription rates for the print edition;

2. Opportunity for TERMIS members to purchase a Regenerative Medicine Online Package that includes online access to: Tissue Engineering, Rejuvenation Research, Stem Cells and Development and Cloning and Stem Cells for $295.00;

3. One year complimentary subscription to Genetic Engineering News. Visit the TERMIS website for further details;

4. The Society's quarterly newsletter, interlink;

5. Reduced registration fees to the meetings sponsored or endorsed by the Society;

6. Posting career opportunities on the TERMIS website free for one month.

Your participation in TERMIS as a member helps the Society become a leading international voice in addressing key issues affecting research and clinical developments in the field of tissue engineering and regenerative medicine.
If you have any questions about the membership benefits offered to TERMIS members, please contact Sarah Wilburn at swilburn@termis.org.

TERMIS Chapter and World Congress Meetings:

Mark Your Calendars!
Updates on the meeting will be provided on the TERMIS website, www.termis.org.

June 2007
TERMIS-North America:
Toronto, Ontario, Canada:
Meeting Chair: Molly Shoichet.
June 13-16, 2007.
Westin Harbour Castle Toronto.

September 2007
TERMIS-Europe:
London, England: Meeting Chair: Robert Brown.
September 5-8, 2007.

November 2007
TERMIS-Asia-Pacific:
Tokyo, Japan:
Meeting Chair: Prof. Kazuo Tsubota.
November 8-9, 2007.

June 2008
TERMIS-Europe:
Porto, Portugal: Meeting Chair: Rui Reis.
June 23-27, 2008.

December 2008
TERMIS-North America:
San Diego, California:
Meeting Chairs: Bill Tawil, Bob Sah and Anthony Ratcliffe.
December 6-10, 2008.
Hyatt Regency LaJolla.

August 2009
World Congress
Seoul, Korea: Meeting Chair: Shin-Yong Moon.
August 31 – September 3, 2009.

Solicitation of Proposals to Host the 2010 and 2011 Chapter Meetings
The Continental Chairs of the Asian-Pacific, European and North American Chapters invite interested parties to submit their proposals to host the 2010 and 2011 Chapter meetings. All parties must complete the Meeting Host Form located at http://www.termis.org/docs/RegionalMeetingApplication.pdf.

All proposals must be submitted by November 1, 2006 to Sarah Wilburn at swilburn@termis.org.

SYIS

Student & Young Investigator Section

At the Regenerate World Congress in Pittsburgh, the "Students and Young Investigators Section" of TERMIS was formalized. The SYIS proposal was presented by the student representatives from North America, European Union and Asia Pacific and was unanimously accepted by the TERMIS board and continental councils.

At the World Congress, SYIS sponsored several activities for students and young investigators, which included local laboratory visits, student-mentor sessions, a professional development workshop and an evening at Hard Rock Café. All of the activities were well attended and exceptionally successful. The Pittsburgh Tissue Engineering Initiative (PTEI) generously provided 15 $1000 USD international travel awards to TERMIS-SYIS members.

More information about SYIS can be found on the TERMIS-SYIS Online Forum, which provides a platform for its members throughout the world to network and interact as well as to enhance the scientific and professional development of its members. More information about SYIS can be found on the TERMIS-SYIS Online Forum, which provides a platform for its members throughout the world to network and interact as well as to enhance the scientific and professional development of its members. Students and Young Investigators default password is their first name initial and their last name in all lower case letters.

We are now actively seeking enthusiastic and motivated members to assist with SYIS. A listing of all the positions that are available within SYIS is located on the Online Forum. If you are interested in running for any of the positions available, please email Ms. Sarah Wilburn at swilburn@termis.org with your name, the position that you are interested in, and a brief paragraph of your qualifications and why you are interested in running for a certain position. Elections for the various positions in TERMIS-SYIS are to be held in November 2006. The upcoming meeting of the TERMIS-EU at Rotterdam (October 2006) will be the next challenge for SYIS and various activities are being planned for it (please check the EU portion of the newsletter. Page 4).

Upcoming Meetings

August 2006

Cambridge Healthtech Institute's Third Annual Tissue Models For Therapeutic Development August 15-16, 2006 in Boston, Massachusetts. Part of CELLutions SUMMIT www.CELLutionsSUMMIT.com.

Advances in Tissue Engineering 14th Annual Short Course, August 16-19, 2006
Rice University, Houston, Texas, USA

May 2008

8th World Biomaterials Congress
May 28 through June 1
Amsterdam, The Netherlands.
Please contact info.wbc2008@ics-online.nl for further details.

TERMIS-EU Rotterdam Meeting

The TERMIS-EU will host their first annual meeting in Rotterdam, The Netherlands from October 8-11, 2006 at the Congress Center De Doelen. The scientific program will include sessions on stem cells and tissue engineering, cells and biomaterials, and includes symposiums organized by the European Society for Biomechanics, the Spanish Society of Histology and Tissue

Engineering, European Society for Biomaterials, European Tissue Repair Society, International Cartilage Repair Society, and the European Society for Artificial Organs.
Even though the submission of abstracts is closed, you still have time to submit a "late poster submission" abstract until September 24, 2006. Please visit the conference website for more details. An early registration rate is being offered until August 1, 2006.

For further program, travel and accommodation details, please visit the conference website, www.etes2006.org.

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TISSUE ENGINEERING ISSN 1076-3279

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The major USES of this title for our Library would be:

RESEARCH: I am a member of the journal's sponsoring society, Tissue Engineering and Regenerative Medicine International Society (TERMIS), and need to have my colleagues, research associates, and assistants have access to this journal's research papers as part of on-going research projects in this important, emerging field.

PREDICTED BENEFIT FOR LIBRARY: My evaluation of this journal's content and scope is very high, and it has a citation factor of 3.143 (2004 ISI Journal of Citation Reports). Adding this authoritative journal to our collection will successfully support the library's ongoing goal of fulfilling the information needs of our institution.

PUBLICATION OUTLET: My current research requires a publications outlet in this exact area. I need this journal to keep up to date with its editorial direction and scope.

ONLINE VERSION: Available as a site license with IP address validation, it is fully searchable and contains active reference links to major external bibliographic resources on the web such as PubMed/MEDLINE, as well as cross-publisher, cross-title linking of citations via the CrossRef system. A subscription includes access to 42 back issues, a critical mass of content.

Additional Comments:

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