



ICHTS e-Update

New journey starts with today's research
September, 2010

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I. Major Events with ICHTS Participation

- June 2010:** ICHTS co-organized 2010 Shanghai Orthopaedic Translational Research (OTR) Conference in Shanghai, China in June 26-28, 2010. 2010 OTR was organized by Division of Medicine and Health of Chinese Academy of Engineering (CAE) and Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine. The focus of the OTR is B-to-B with participants from research institutions, hospitals and industrial sectors. Prof. Dai KR made an important opening speech to encourage multidisciplinary research and development in the musculoskeletal theme. This is another milestone since 2009 OTR in Shanghai with contribution of ICHTS members. Dr. Fei Wang, the Program Director of Musculoskeletal Theme in NIH and other ICHTS senior members were invited to key talks at 2010 OTR (Fig. 1).



Fig. 1. Left: ICHTS senior member, Dr. Fei Wang, Program Director of Musculoskeletal Theme in NIH was invited to give a keynote lecture on NIH Translational Research Roadmap relevant to Musculoskeletal Research. Right: ICHTS senior members at 2010 OTR: from left to right: Drs. Tingting Tang, Gang Li, Fei Wang, and Ling Qin.

- July 2010:** ICHTS co-organized 2010 Shanghai International Symposium on Orthopaedic Biomechanics held at Shanghai Jiao Tong University School of Medicine on July 24-25, 2010. The symposium was sponsored by Biomechanics Committee affiliated to the Chinese Society of Biomedical Engineering and the Chinese Society of Theoretical and Applied Mechanics. The symposium was organized by Shanghai Key Laboratory of Orthopaedic Implant and Department of Orthopaedic Surgery, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine. Biomechanics has been integrated extensively into many biological disciplines over the past decades, including musculoskeletal and cardiovascular areas.



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Biomechanics provides many solutions for solving clinical problems, especially in orthopaedic surgery. The topics of this symposium covered "Mechanical Analysis and Testing of Bone Strength", "Mechanobiology and Tissue Engineering Study", "Artificial Joint Research", "Influence of Mechanical Environment on Modeling of Bone and Material" etc. Fourteen experts were invited to give the lectures in the symposium. Among these experts are some ICHTS members including Drs. Ling Qin (president), Yixian Qin (past president), Xiangdong Guo (president-elect), Xiaodu Wang, Huicong Wang, and Tingting Tang et al. In addition, mainland experts who gave lectures included Dr. Yubo Fan, Chairman of the Chinese Society of Biomedical Engineering, Dr. Zonglai Jiang, Chairman of Biomechanics Committee affiliated to the Chinese Society of Biomedical Engineering and the Chinese Society of Theoretical and Applied Mechanics, Dr. Kerong Dai, academician of Chinese Academy of Engineering, and Professor Tingting Tang, Director of Shanghai Key Laboratory of Orthopaedic Implant. Around 120 representatives from overseas and domestic research and higher-education institutions attended the symposium (Fig. 2).



Fig. 2: ICHTS co-organized 2010 Shanghai International Symposium on Orthopaedic Biomechanics in July in Shanghai. Around 120 representatives from both overseas and domestic research and higher-education institutions attended the symposium, including ICHTS members Drs. Ling Qin (president), Yixian Qin (past president), Xiangdong Guo (president-elect), Xiaodu Wang (Chair of Program Committee), and Huicong Wang (Member of China Development Committee), and Tingting Tang (Member of China Development Committee) et al.

- July 2010:** Dr. Randy Levinson, Senior Editor of Nature Medicine visited ICHTS-collaborating Centers in China Accompanied by ICHTS members Drs. Ling Qin, Yi-Xian Qin, Di Chen, and Xu Cao, Dr. Randy Levinson, Senior Editor of Nature Medicine visited ICHTS-collaborating Centers in Mainland and Hong Kong between July 18-30, 2010. The collaborating centers included Beijing 301 Army Orthopedic Research Institute, Xian 4th Military Orthopaedic Hospital and Research Institute, Shanghai Key Laboratory of Orthopaedic Implant and Department of Orthopaedic Surgery, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Orthopaedic Research Institute of Department of Orthopedic Surgery, Suzhou University, and Musculoskeletal Research Lab of the Department of Orthopaedics & Traumatology, the Chinese University of Hong Kong and Hong Kong University (Fig. 3). Apart from scientific presentations and discussions on musculoskeletal theme, Dr. Levinson also made an inspiring talk on "Navigating the Publishing Process at Nature Medicine" (Fig. 3). Dr. Xu Cao also introduced how to publish good scientific work in Journal of Bone and Mineral Research. The science and technology in China is developing rapidly. This is also true in musculoskeletal research. Dr. Levinson made such a remark at the end of his China tour "I know I was there to educate scientists on the editorial criteria at Nature Publishing Group, but it was truly a two-way street as I learned so much on my trip. I was duly impressed by the quality of science and the drive to improve upon that science. It's clear that it's a high priority in China to achieve great success in basic science and translational medicine. And given the high level of energy and enthusiasm that was quite evident among all the scientists and clinicians I met I am positive (that) China will succeed in these goals."



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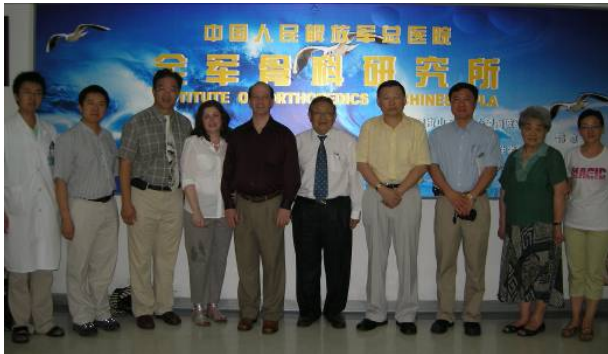


Fig. 3. Nature Medicine Senior Editor Dr. Randy Levinson's China tour to ICHTS-collaborating centers in musculo-skeletal research, group photo with local scientists and ICHTS senior members. Hosting persons in charge include Prof. Shibi Lu of Beijing 301 General Hospital (upper-left), Prof. Fuxian Pei of Xi'an 4th Military Orthopaedic Hospital (upper-right), Prof. Keron Dai of Shanghai Ninth People's Hospital (Mid-left), Prof. Huiling Yang of Suzhou University (mid-right), and Prof. LK Hung of the Chinese University of Hong Kong (lower-left).



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II. ICHTS Upcoming Major Events

1. **October 15-19, 2010:** ICHTS Membership Meeting at 2010 ASBMR Annual Meeting in Toronto, Canada. The date and venue have been set for 16 October, 2010, Fairmont Royal York, Toronto, ON, Canada, Time: 7:00 -8:30 pm. Webster Jee Awards will be announced at the meeting. Contact persons for the membership meeting: ICHTS OC member Dr. Hong Zhou (email: hzhou@anzac.edu.au) and local chairperson: Dr. Lidan You (email: youlidan@mie.utoronto.ca)
2. **October 25-27, 2010:** 2010 ICOBR pre-congress workshop in Guangdong Medical Collage, Dongguan (40minuts driving from Shenzhen). 1) Dr. Webster Jee and Dr. Ling Qin (HK) are the co-chairs of this workshop for ICHTS while Dr. Liao Cui of Guangdong Medical Collage is the local host of the meeting (email: cuiliao@163.com). Details can be found at www.ichts.org and www.gdmc.edu.cn; 2) Accepted abstracts will be published in both workshop proceeding and BoneKey.
3. **October 28-30:** In collaboration with Chinese Medical Association (CMA) and International Society of Bone and Mineral Society (IBMS), ICHTS organizes 2010 ICOBR in Shenzhen, an important economic special region next to Hong Kong and Macao. Details of 2010 ICOBR are available at homepages: www.csobmr.org.cn/icobr2010, www.IBMS.org, or www.ICHTS.org. An animal model workshop has also been organized by ICHTS on October 28 morning (<http://www.csobmr.org.cn/icobr2010/en/page.asp?pageid=43.html>). Workshop venue will be in Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences (SIAT) (www.siat.ac.cn). A total of 450 abstracts were submitted for 2010 ICOBR. Accepted abstracts will be published in BONE Supplement.
4. **Nov 1-2:** October ICHTS retreat and Board Meeting in China. It has been decided to last for two days immediately after ICOBR in Shenzhen, i.e., Nov 1st and 2nd, 2001. Chairman of Board Director Dr. Qian Chen will organize the board meeting and prepare the agenda. Dr. Ling Qin (HK) (ICHTS president) and Dr. ZZ John Yuan of local committee of ICOBR, and Dr. Hong Zhou (ICHTS Women's Committee Chairman) are arranging the associated logistics.

III. News on ICHTS-Mainland Collaborative Centers

Opening of "ICHTS Collaborating Center for Orthopaedic Translating Research of Shanghai Key Laboratory of Orthopaedic Implant"

An opening ceremony for "ICHTS Collaborating Center for Orthopaedic Translating Research of Shanghai Key Laboratory of Orthopaedic Implant" was held on June 28, 2010 in Shanghai, which marked the official establishment of above Collaborating Center. ICHTS is an important education and research platform for Chinese scientists in musculoskeletal theme internationally. The objective for establishing the above Orthopaedic Translational Research Center is to learn the experiences on how to realize effectively the achievements in translational medicine with help of ICHTS and build a communication bridge among scientists and engineers pursuing the basic scientific research and understanding the clinical demands, among Chinese researchers and internationally well-known experts to leverage the resources of research and application of the orthopaedic laboratory in Shanghai Ninth Peoples' Hospital.



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Fig. 4. Opening of “ICHTS Collaborating Orthopaedic Translating Research Center of Shanghai Key Laboratory of Orthopaedic Implant”. Prof. Keron Dai, academician of Chinese Academy of Engineering from Shanghai Ninth People’s Hospital, the affiliated hospital of Shanghai Jiao Tong University School of Medicine and Dr. Ling Qin, ICHTS president at the opening ceremony.

IV. Members’ Recognitions

Dr. Jeremy J. Mao’s research was featured in NIH Research News -“Coaxing the Body’s Cells to Repair Damaged Joints”

Scientists have developed a technique that leads to successful regrowth of damaged leg joints in rabbits. The study shows that it’s possible to lure the body’s own cells to injured regions and generate new tissues, such as cartilage and bone. With further research, the finding could have implications for joint renewal in humans.

Joint disorders are becoming increasingly common as the world population continues to age. Osteoarthritis—a condition marked by the structural breakdown of cartilage and bone—is a leading cause of chronic disability worldwide. Severe cases may require joint replacement surgery, often with artificial metal joints that last for about 10 or 15 years. A substantial proportion of arthritis and trauma patients younger than 65 years of age typically are not candidates for metal joint replacement, and often have to restrict their physical activities. To find more long-lasting alternatives, scientists have explored using stem cells to grow replacement tissues outside the body before transplantation into joints. Success so far has been limited.

Taking a different approach, Dr. Jeremy J. Mao of Columbia University and his colleagues fabricated biodegradable, porous scaffolds in the shape of a leg bone’s rounded tip. They tested to see if the bioscaffold, when implanted into a rabbit’s leg joint, would naturally attract the body’s own stem cells and encourage the growth of new tissues. Their research was supported by NIH’s National Institute of Biomedical Imaging and Bioengineering (NIBIB) and New York State Stem Cell Science.

The scientists treated the damaged leg joints of 20 rabbits by implanting bioscaffolds infused with a collagen gel. In 10 of the rabbits, the gel was also loaded with a protein called transforming growth factor $\beta 3$ (TGF $\beta 3$). Three rabbits with damaged leg joints received no implants.

As described in the July 29, 2010, early online edition of the *Lancet*, the researchers found that by 3 to 4 weeks after surgery, rabbits with TGF $\beta 3$ -infused bioscaffolds were able to move around almost as well normal rabbits. In contrast, the untreated rabbits continued to limp at all times.



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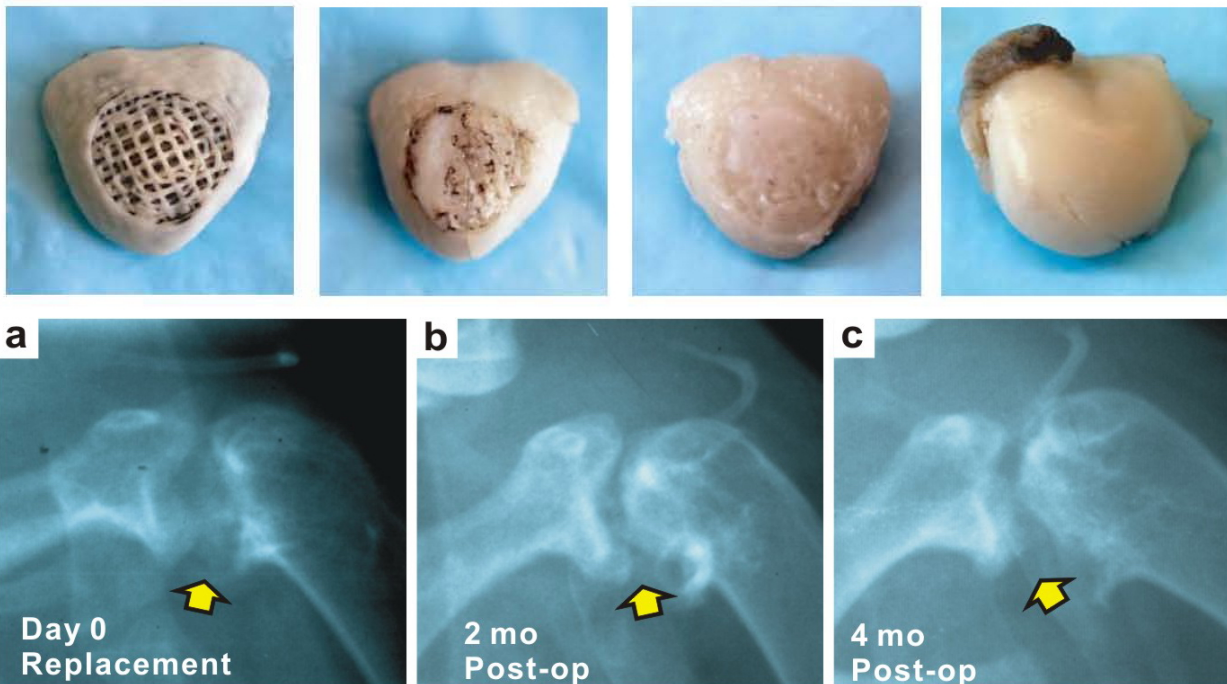
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By 4 months after surgery, both bone and cartilage had regenerated in the treated joints. The TGF β 3-infused bioscaffolds showed the greatest improvement. These implants had grown a whole layer of cartilage tissue and had recruited 130% more cells to the joint area than did the bioscaffolds without the TGF β 3. The compressive and shear properties of the TGF β 3-infused cartilage layers were similar to those of normal cartilage and were significantly better than the cartilage on the TGF β 3-free scaffolds.

“This is the first time an entire cartilage joint was regenerated,” says Mao. “By successfully regenerating cartilage in this way, we hope that this approach would work with other tissues without cell transplantation.” “Furthermore, this is a rare example to regenerate complex tissues by recruiting the body’s endogenous stem cells, rather than the typical approach of taking stem cells out of the body”

Mao and his colleagues note that the new method might help to sidestep some of the problems inherent in cell transplantation, including immune system rejection and transmission of disease-causing microbes. Significant research is needed, however, before the technique could be tested for repairing human joints.



V. Job and Education Opportunities

- 1) Principal investigator is searched by Orthopaedic Research Institute of Suzhou University. For details, please contact Prof. HL Yang (suzhospine@163.com).
- 2) Welcome to apply for Hong Kong Ph.D Fellowship Scheme via <http://www.ugc.edu.hk/eng/rgc/hkphd/>.
- 3) Multiple postdoctoral positions are available in the Human Genetics and Genomics Program at the University of Missouri-Kansas City (UMKC) School of Medicine. Research experience in at least one of the following areas is desired: human genetics or genomics, proteomics, population genetics, pharmacogenomics, and bone molecular genetics. Interested candidates please contact Dr. Hong-Wen Deng at dengh@umkc.edu.



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VI. Message from ICHTS Publication Committee

Dear members and colleagues:

A new email account (ichts.update@gmail.com) has been set up for you to submit or share information in ICHTS E-newsletter. You may send any of the following materials to this email account for distribution:

ICHTS major meetings and events.

Grant awards and/or major publications that are thought to be of high scientific and/or social impact.

Members recognitions.

Job and education opportunities.

Others.

Thanks!

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