

# Tissue Engineering in China

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## Previous Review on Tissue Engineering in China

- ❖ **1. Zhou Xiang and Myron Spector**
- ❖ **A Glimpse of Tissue Engineering in China,**
- ❖ **Tissue Engineering, V8 No.2 2002.**
- ❖ ---- A Review based on First International Conference on Biomaterials (China), Beijing, 2001
  
- ❖ **2. WEI LIU, LEI CUI, and YILIN CAO**
- ❖ **A Closer View of Tissue Engineering in China: The Experience of Tissue Construction in Immunocompetent Animals**
- ❖ **Tissue Engineering V9, Suppl. 1, 2003**
- ❖ ----A Review based on 973 Program: Basic Scientific Problems in Tissue Engineering

## Conference & Symposium on Tissue Engineering Held in China

- ❖ 1997: The First Symposium on Tissue Engineering, Beijing
- ❖ 1999: The First National Conference on Tissue Engineering, Shanghai
- ❖ 2000: The Second National Conference on Tissue Engineering, Guangzhou
- ❖ 2004: China Forum on Tissue Engineering,

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News on "Beijing Science and Technology News" for 97 symposium on Tissue Engineering

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## National Program on Tissue Engineering

### the National High Technology Research and Development Program of China (863 Program)

Tissue Engineering (2002-2005)

Including 11 projects and 1.5~2 million RMB(about 200,000~250,000 \$) each.

### National Key Basic Research and Development Program (973 Program)

Basic Scientific Problems in Tissue Engineering, about 40 million RMB(about 500,000\$) totally.(1999-2004)

Cao YL, Shanghai Tissue Engineering Centre

## National Natural Science Foundation of China (NSFC)

- ❖ Totally 95 Projects on Tissue Engineering up to now: 0.1~0.3 million RMB each,
- ❖ E.g.
- ❖ 39870805/C03030306 Application Research on Peripheral Nerve Repair Based on Tissue Engineering Strategy, Gang Cheng Zhongshan Medical Univ. 120,000 RMB
- ❖ 30270393/C010515 Control Release of Growth Factor in Tissue Engineering, Daping Quan, Zhongshan Univ.200,000 RMB
- ❖ 39970731/C03030304 Study of Prosthetic Heart Valve Autograft, Shengshou Hu, Chinese Medical Academy, 120,000 RMB
- ❖ 30170934/C03030304 Fabrication of Small-caliber Prosthetic Vascular Graft Based on Tissue Engineering Strategy, Yuqing Wu, Chinese Medical Academy, 200,000 RMB
- ❖ 30170256/C010509 Biodegradable Polymer Scaffold for Tissue Engineering Urinary Bladder, Changyong Wang, Military Medical Academy of PLA, 180,000 RMB

## National Development and Reform Commission

### ❖ The State Hi-tech Industrialized Demonstrative Project

50~100 million RMB each

- ❖ Bioresorbable Poly-lactic acids as Biomedical Materials & Series device
- ❖ New Orthopaedics Repair Materials-Bone Youdao (main component is rhBMP-2)
- ❖ Neuron Growth Factor
- ❖ Epidermal Growth Factor
- ❖ Bioactive Hard Human Tissue (Bone, Articulation, Teeth) Repair Materials

## Major Tissue Engineering Research Center

Location	Institute
Beijing	Tsinghua University Institute of Mechanics, Chinese Academy of Science Institute of Chemistry, Chinese Academy of Science General Hospital of People's Liberation Army Academy of Military Medical Academy
Chengdu	West China Medical Center, Sichuan University
Chongqing	Third Military Medical University
Guangzhou	First Military Medical University Medical Center, Jinan University Medical Center, Zhongshan University
Hangzhou	Zhejiang University
Shanghai	Shanghai Second Medical University Shanghai Tissue Engineering Research and Development Center Eastern China University of Science and Technology Fudan University Institute of Silicates, Chinese Academy of Science Second Military Medical University
Tianjin	Tianjin University
Xian	Fourth Military Medical University

## Recent Books on Tissue Engineering

Photos of three book jackets removed for copyright reasons.

## Chinese Worker's Research Field

- ❖ *Bone engineering*
- ❖ Liao SS, Cui FZ et al. In vitro and in vivo degradation of the mineralized collagen based composite scaffold:nHAC/PLA. Tissue Engineering, Accepted.

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Nano-hydroxyapatite/collagen-PLA scaffold

Osteoblast cultured on nHAC/PLA for 12d

See Liao, S.S., K. Guan, F.Z. Cui, S.S. Shi and T.S. Sun.

"Lumbar spinal fusion with a mineralized collagen matrix and rhBMP-2 in a rabbit model."  
*Spine*. 28, no. 17 (2003 Sep 1):1954-60.

#### ☛ *Cartilage engineering*

☛ Deng Y, Zhao K, Zhang XF, Hu P, Chen GQ, Study on the three-dimensional proliferation of rabbit articular cartilage-derived chondrocytes on polyhydroxyalkanoate scaffolds, *BIOMATERIALS*, 23 (20): 4049-4056 OCT 2002

#### ☛ *Tendon engineering*

☛ Cao, Y.L., Liu, Y.T., Liu, W., Shan, Q.X., Buonocore, S.D., and Cui, L. Bridging tendon defects using autologous tenocyte engineered tendon in a hen model. *Plast. Reconstr. Surg.* 110, 1280, 2002.

#### ☛ *Skin engineering*

☛ Ma JB, Wang HJ, He BL, Chen JT. A preliminary in vitro study on the fabrication and tissue engineering applications of a novel chitosan bilayer material as a scaffold of human neonatal dermal fibroblasts *BIOMATERIALS* 22 (4): 331-336 FEB 2001

#### ☛ *Cornea engineering*

☛ Chen, J.Q., Zhang, S., Guo, L.J., Zhen, H.L., Lin, J.X., and Zhen, J.L. A preliminary study of reconstruction of corneal tissue with in vitro three-dimensional culture technique. *Chin. J. Ophthalmol.* 37, 244, 2001.

#### ☛ *Vessel engineering*

☛ Liu, D.L., Liu, Y., Liu, W., Cui, L., Shang, Q.X., and Cao, Y.L. Tissue engineering of small-caliber arteries in nude mice and dogs. Abstract presented at the Plastic Surgery Research Council 47th Annual Meeting. Boston, MA, 2002. Abstract no. 65A.

#### ☛ *Peripheral nerve engineering*

☛ Cheng B, Chen ZR. Fabricating autologous tissue to engineer artificial nerve *MICROSURGERY* 22 (4): 133-137 2002

#### ☛ *Brain Tissue Engineering*

☛ Cui FZ, Tian WM, Fan YW et al. Cerebrum repair with PHPMA hydrogel immobilized with neurite-promoting... *J.BIOACTIVE COMPATIBILLE POLYMER* 18(2003)413

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Human ear cultured on  
rabbit (<http://www.sina.com.cn>  
2001/01/30 11:25 New  
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