

Regenerative medicine research in China: from basic research to clinical practice

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I am very happy to write editorial for this Special Issue of Stem Cells and Regenerative Medicine in China in *Science China Life Sciences*. As we all know, stem cells and regenerative medicine research is the frontiers not only in China, but also in the world. In recent decades, rapid research progressing, strong governmental support and recruitment of highly trained scientists from abroad together with domestic outstanding researchers and clinicians have made it possible for China to become an important player on the international stage of regenerative medicine, including stem cell research, tissue engineering and gene therapy. For example, stem cell research and clinical trials in China rank forefront in the world. According to related analysis of publication data, China published about 10600 articles on stem cells in international peer-reviewed journals in the recent five years, compared with only less than 100 articles 10 years ago, which has surpassed most developed nations' publication levels. Meanwhile, with gradually increasing healthcare burden of degenerative diseases, tumors, tissue and organ defects and other age-related diseases in China, policy makers and regulators have put more emphasis on innovative therapeutic research in regenerative medicine. Stem cell research, tissue engineering and gene therapy are key areas receiving priority funding. From 2006 to 2010, the Chinese government had provided more than 0.3 billion USD research funding to support related research on stem cells. Although it is still far less than the research investment in the United States, scientists and clinicians in leading research groups had benefited from these fundings and made

certain achievements. These achievements involved pre-clinical studies of coronary heart diseases, heart failure, joint cartilage repair, diabetes, liver failure, sweat gland regeneration after burn and wounds as well as iPS studies. Last year, a supplement about Regenerative Medicine in China was published by *Science*, which provided new insights for scientists, doctors, and even for others who are interested.

The maturation of a new therapeutic approach takes decades and regeneration medicine-based therapy is no exception. Although China has rapidly built up capacity in regenerative medicine, there remain hindering issues for the development of these new therapeutics. In my view, the major issue is insufficient translation of basic research findings to treatment of patients. Basic and clinical scientists, as well as scientists working in the biotechnological and pharmaceutical industries, need to be more aware of the importance of connection of basic research with clinical practice. Within the next decade, substantial progress in regenerative medicine in China is expected in the following areas: induced stem cells application in synchronized repair and regeneration of multiple tissue types, reconstitution of large organs through innovative tissue engineering technology, and the large-scale clinical application of tissue engineering products. The development of regenerative medicine-based therapies will benefit greatly from the experiences and failures as well as increasing support, and we hope that the new field of regenerative medicine in China can be impacted by more remarkable results and globally competitive innovation.

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Biographical Sketch

Dr. Fu Xiaobing is a Professor and Director of the Key Research Laboratory of Wound Repair and Regeneration of PLA. He is the Director of the Institute of Basic Medical Science, College of Life Sciences, General Hospital of PLA (301 Hospital), Medical College of PLA. He is President of the Chinese Tissue Repair Society and the Chinese Trauma Society. He serves as the members of the World Union of Wound Healing Societies and editorial board member of international journals such as *Wound Repair and Regeneration*, *International Wound Journal*, *International Lower Extremity Wound Journal*, *Advances in Wound Care* and *Science China Life Sciences*. He was elected to the Chinese Academy of Engineering (Division of Medical and Health) in 2009.

Prof. Fu has made great contributions in the fields of trauma, tissue repair and regeneration, especially in the fields of growth factor functions and their effects in regulating wound healing, and stem cell biology and their application in sweat gland regeneration. His research has been supported in part by the National Basic Research Program of China, National Distinguished Young Scientists and National Natural Science Foundation of China. He has published more than 400 scientific papers, including about 100 papers in international journals. As an editor-in-chief, he published 12 books, including *Regenerative Medicine: Basic Principle and Practices* and *Modern Traumatology*. He won numerous international and national prizes for his achievements in the past 20 years.

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