

Contents

<i>Preface</i>	<i>ix</i>
<i>Preface</i>	<i>xi</i>
Chapter 1: Engineered Growth Factor	1
Engineered Growth Factors and Cutaneous Wound Healing: Success and Possible Questions in the Past 10 Years	2
<i>Xiaobing Fu, Xiaokun Li, Baio Cheng, Wei Chen, Zhiyong Sheng</i>	
Chapter 2: FGFs in Injury Repair and Regeneration	17
Regulation of Autophagy and Ubiquitinated Protein Accumulation by bFGF Promotes Functional Recovery and Neural Protection in a Rat Model of Spinal Cord Injury	18
<i>Hongyu Zhang, Xiaokun Li</i>	
The Antiscar Effects of bFGF on Wound Repair In Vitro and In Vivo	35
<i>Hongxue Shi, Saverio Bellusci, Xiaokun Li, Jian Xiao</i>	
Exogenous bFGF Inhibits ER Stress-Induced Apoptosis and Improves Recovery From Spinal Cord Injury	51
<i>Hongyu Zhang, Xiaokun Li, Jianxiao</i>	
Improved Refractory Wound Healing With Administration of aFGF in Diabetic Rats	66
<i>Liyun Xie, Hongchang Gao, Xiaokun Li</i>	
Acceleration of Diabetic Wound Healing With PEGylated rhaFGF in Healing-Impaired Streptozocin Diabetic Rats	77
<i>Zhifeng Huang, Xiaokun Li</i>	
Combined Use of aFGF, G-CSF, and ZnSO ₄ Accelerates Diabetic Ulcer Healing	93
<i>Shaoqiang Lin, Xiaokun Li</i>	
Acceleration of Diabetic Wound Healing With Chitosan-Cross-Linked Collagen Sponge Containing rhaFGF in Healing-Impaired Streptozocin Diabetic Rats	107
<i>Wei Wang, Shaoqiang Lin, Lu Cai, Xiaokun Li</i>	

Comparison of the Therapeutic Effects of rhaFGF and rhbFGF in Wound Healing in Diabetic Patients	128
<i>Yi Tan, Lu Cai, Xiaokun Li</i>	
Chapter 3: FGF Mutants	145
Cardiovascular Protection of Nonmitogenic haFGF From Oxidative Damage In Vitro and In Vivo	146
<i>Xiaokun Li</i>	
Retina Protective Effect of aFGF After Canceling Its Mitogenic Activity.....	156
<i>Hua Xu, XiaoKun Li</i>	
High-Level Expression and Purification of Tat-haFGF ¹⁹⁻¹⁵⁴	166
<i>Yadong Huang, Xiaokun Li</i>	
Purification and Modification by Polyethylene Glycol of a New Human Basic Fibroblast Growth Factor Mutant-hbFGF ^{Ser25,87,92}	176
<i>Xiaoping Wu, Xiaokun Li</i>	
High-Level Expression and Purification of a Nonmitogenic Form of haFGF in <i>Escherichia coli</i>	184
<i>Xiaoping Wu, Xiaokun Li</i>	
Protective Effects of Nonmitogenic haFGF on Hydrogen Peroxide-Induced Damage to Cardiomyocytes In Vitro	191
<i>Zhuofeng Lin, Xiaokun Li, Xiaobing Fu</i>	
Enhanced Antiapoptosis and Gut Epithelium Protection Function of aFGF After Cancelling of Its Mitogenic Activity	200
<i>Xiaobing Fu, Xiaokun Li, Tong Wang, Biao Cheng, Zhiyong Sheng</i>	
Chapter 4: Pathophysiology and Pharmacology of FGFs	217
Adiponectin Mediates the Metabolic Effects of FGF21 on Glucose Homeostasis and Insulin Sensitivity in Mice	218
<i>Zhuofeng Lin, Aimin Xu, Xiaokun Li</i>	
bFGF Inhibits ER Stress Induced by Ischemic Oxidative Injury via Activation of the PI3K/Akt and ERK1/2 Pathways.....	233
<i>Zhouguang Wang, Xiaokun Li, Jian Xiao</i>	
Cardiac Protection by bFGF From Ischemia/Reperfusion-Induced Injury in Diabetic Rats	250
<i>Jian Xiao, Xiaokun Li</i>	
Differential Specificity of Endocrine FGF19 and FGF21 to FGFR1 and FGFR4 in Complex With KLB.....	261
<i>Chaofeng Yang, Xiaokun Li, Wallace L. McKeenan, Yongde Luo</i>	

Serum Levels of FGF21 Are Increased in Coronary Heart Disease Patients and Are Independently Associated With Adverse Lipid Profile.....	280
<i>Zhuofeng Lin, Xiaokun Li, Wenke Feng</i>	
Circulating FGF21 Levels Are Progressively Increased From the Early to End Stages of Chronic Kidney Diseases and Are Associated With Renal Function in Chinese.....	288
<i>Zhuofeng Lin, Wenke Feng, Xiaokun Li</i>	
Effects of bFGF on Radiation-Induced Proliferation Inhibition and Apoptosis in Thymocytes and Splenocytes.....	303
<i>Xiaokun Li</i>	
Chapter 5: FGFs in Development and Reproductive Functions.....	315
Involvement of Testicular Growth Factors in Fetal Leydig Cell Aggregation After Exposure to Phthalate In Utero.....	316
<i>Lin Han, Renshan Ge, Xiaokun Li</i>	
Inhibition of LH-Stimulated Androgen Production in Rat Immature Leydig Cells: Effects on Nuclear Receptor Steroidogenic Factor 1 by FGF2.....	326
<i>Yechen Xiao, Xiaokun Li, Renshan Ge</i>	
Chapter 6: Design and Discovery of FGF/FGFR Inhibitors	339
Anticancer Molecules Targeting FGFR.....	340
<i>Guang Liang, Xiaokun Li</i>	
P7 Peptides Suppress the Proliferation of K562 Cells Induced by bFGF.....	356
<i>Cong Wang, Xiaokun Li, Xiaoping Wu</i>	
The FGF2-Binding Peptide P7 Inhibits Melanoma Growth In Vitro and In Vivo.....	369
<i>Yonglin Yu, Xiaoping Wu</i>	
Chapter 7: Protein Structure and Modification of FGFs	385
A Novel Solid-Phase Site-Specific PEGylation Enhances the In Vitro and In Vivo Biostability of rhKGF1.....	386
<i>Zhifeng Huang, Xiaokun Li</i>	
Solid-Phase N-Terminus PEGylation of rhFGF2 on Heparin-Sepharose Column.....	404
<i>Zhifeng Huang, Xiaokun Li</i>	
A Better Antidiabetic rhFGF21 Modified With Polyethylene Glycol.....	420
<i>Zhifeng Huang, Xiaokun Li</i>	

Cell-Penetrating Peptide TAT-Mediated Delivery of aFGF to Retina and Protection Against Ischemia-Reperfusion Injury in Rats	441
<i>Yi Wang, Xiaokun Li</i>	
Enhanced Protection of Modified haFGF With Polyethylene Glycol Against Ischemia/Reperfusion-Induced Retinal Damage in Rats	450
<i>Zhifeng Huang, Xiaokun Li</i>	
Site-Directed PEGylation of hbFGF	466
<i>Xiaoping Wu, Xiaokun Li</i>	
Chapter 8: Bioengineering of FGFs and New Drug Developments.....	477
Improving the Cardio Protective Effect of aFGF in Ischemic Myocardium With Ultrasound-Mediated Cavitation of Heparin-Modified Microbubbles: Preliminary Experiment.....	478
<i>Yingzheng Zhao, Xiaokun Li</i>	
Effects of KGF2 on Corneal Epithelial Wound Healing in a Rabbit Model of Carbon Dioxide Laser Injury	491
<i>Xiaojie Wang, Xiaokun Li</i>	
High Levels of Expression of FGF21 in Transgenic Tobacco (<i>Nicotiana benthamiana</i>).....	502
<i>Hongqi Fu, Xiaokun Li</i>	
Isolation of a Novel bFGF-Binding Peptide With Potent Antiangiogenic Activity.....	512
<i>Xiaoping Wu, Xiaokun Li</i>	
High-Level Expression and Purification of Soluble Recombinant FGF21 Protein by SUMO Fusion in <i>Escherichia coli</i>	520
<i>Huiyan Wang, Xiaokun Li</i>	
Lactose Inducement Increases Production of Recombinant KGF2 in <i>Escherichia coli</i>	531
<i>Haishan Tian, Xiaokun Li</i>	
SUMO Fusion System Facilitates Soluble Expression and High Production of Bioactive hFGF23	540
<i>Xiaoju Liu, Xiaokun Li</i>	
Index	559