

Contents

1 Advances Is Mesenchymal Stem Cell Application for Cardiovascular Disease Treatment.	1
1.1 Genetically Modified Mesenchymal Stem Cells	1
1.1.1 Genetically Modified MSCs with Improved Survival and Engraftment After Transplantation	2
1.1.2 Genetically Modified MSCs with Enhanced Cardioprotective Function	6
1.1.3 Genetically Modified MSCs Exhibiting Improved Transplantation Potential and Cardioprotective Function	7
1.1.4 Future Directions.	9
1.2 Pharmacologically Optimized Mesenchymal Stem Cells.	9
1.2.1 Mesenchymal Stem Cells Optimized via Pharmacological Agent Pretreatment	11
1.2.2 Mesenchymal Stem Cells Optimized via Cytokine and/or Growth Factor Pretreatment	14
1.2.3 Future Directions.	17
1.3 Preconditioned Media.	17
1.3.1 Hypoxia	17
1.3.2 Mechanical Stretching	18
1.4 Application of Injectable Hydrogels for Cardiovascular Disease Treatment	20
1.4.1 Biomaterial Library	21
1.4.2 Cellular Injectable Biomaterials.	21
1.4.3 Synthetic Biomaterials.	24
1.4.4 Acellular Injectable Biomaterials.	25
References.	30

2	Nanorobotic Agents and Their Biomedical Applications	37
2.1	Nanomedicine and Nanorobotics	37
2.2	Bio-nanorobotics.	38
2.3	Nanorobotic Agents in Biomedical Applications	38
2.4	Biomolecular Machines and Bio-nanorobots.	39
2.5	AFM Based Nanorobotic Systems	53
	References.	60

Innovative Diagnostics and Treatment: Nanorobotics
and Stem Cells

Jadczyk, T.; Tfaily, E.B.; Mishra, S.; Jędrzejek, M.; Bołoz,
M.; Padmanabhan, P.; Wojakowski, W.; Stárek, Z.;
Martel, S.; Gulyás, B.

2017, VII, 61 p. 25 illus., 22 illus. in color., Softcover
ISBN: 978-981-10-4526-4