



The Global Market for Stem Cells

April 2018

Paul Evers

Report Code: BIO035G

Table of Contents

- Chapter 1: Introduction 1**
 - Study Goals and Objectives..... 1
 - Reasons for Doing the Study..... 1
 - Scope of Report..... 1
 - Market Analyses and Forecasts 1
 - Methodology..... 2
 - Intended Audience..... 2
 - Information Sources..... 2
 - Analyst’s Credentials..... 4
 - Related BCC Research Reports..... 4

- Chapter 2: Summary and Highlights..... 6**
 - Definitions..... 6
 - Applications..... 6
 - Research and Commercialization..... 6
 - Funding 7
 - Market..... 7

- Chapter 3: Overview 11**
 - Cells..... 11
 - Stem Cells..... 11
 - Induced Pluripotent Stem Cells..... 14

- Chapter 4: Stem Cell Research 20**
 - History..... 20
 - Embryonic Stem Cells..... 21
 - Growth and Identification of Embryonic Stem Cells 21
 - Stimulating Embryonic Stem Cells to Differentiate..... 22
 - Adult Stem Cells 22
 - Mesenchymal Stem Cells..... 23
 - Hematopoietic Stem Cells 23
 - Neural Stem Cell..... 23
 - Endothelial Progenitor Cell..... 23
 - Epithelial Stem Cell..... 23
 - Very Small Embryonic-Like Cell 23
 - Cord Blood Stem Cells..... 24
 - Induced Pluripotent Stem Cells..... 24
 - Nuclear Reprogramming 24
 - Cell-Based Therapeutics..... 25
 - Embryonic-Derived Stem Cells 25
 - Adult and Progenitor-Derived Stem Cells 25
 - Engineered Stem Cells for Transplantation..... 26
 - Therapeutic Stem Cell Banking 26
 - Stem-Cell-Based Biomedical Research..... 27
 - Stem Cell Research Centers 27
 - Regulation of Stem Cell Research 31
 - National Regulatory Measures..... 32

Practicalities of Stem Cell Research and Production	38
Stem Cell Production	38
Stem Cell Acquisition.....	38
Stem Cell Production Economics.....	40
Customized Therapy.....	40
Banks	41
Novel Stem Cell Production Developments	41
Isolation and Engineering.....	42
Adult Stem Cells	42
Embryonic Stem Cells	43
Induced Pluripotent Stem Cells	44
Bioprinting.....	45
Stem Cell Banking	46
Chapter 5: Stem Cell Applications	49
Regenerative Medicine	49
Current Stem Cell Therapy Applications	51
Cancer.....	51
Amyotrophic Lateral Sclerosis	52
Parkinson’s Disease	54
Spinal Cord Injury	55
Alzheimer’s Disease.....	56
Heart Disease	57
Peripheral Arterial Disease.....	60
Type 1 Diabetes	62
Orthopedic Repair	63
Liver Failure	64
Graft-Versus-Host Disease	65
Lung Disease.....	65
Chapter 6: Stem Cell Patents	68
General Background on Patents	68
Stem Cell Patents	69
Policies by Country.....	70
U.S.	70
Canada.....	70
EPC.....	70
U.K.	70
Germany.....	71
Japan.....	71
China.....	71
Induced Pluripotent Stem Cells.....	71
Recent Patent Activity.....	73
Chapter 7: Stem Cell Markets	75
Markets for Stem Cells.....	75
Market Drivers.....	75
Market Opportunities by Therapeutic Class	81
Cancer.....	81
Cardiovascular Disease	82
Myocardial Infarction	83

Central Nervous System Disease.....	85
Spinal Cord Injury	85
Neurodegenerative Diseases.....	87
Diabetes Mellitus.....	88
Skeletal System.....	89
Global Market Estimates and Forecasts	90
Regional and National Market Analysis	91
Americas.....	91
U.S.	91
Canada.....	94
Brazil.....	96
Mexico	97
Europe.....	98
France.....	102
Germany.....	103
Italy.....	104
Spain.....	106
U.K.	108
Asia-Pacific	109
Market Opportunities by Disease Category	109
Japan.....	111
China.....	113
India.....	116
Rest of World.....	118
Chapter 8: Company Profiles	121
Appendix 1: Glossary	154
Appendix 2: Significant Stem Cell Research Patents.....	161
About BCC Research	167
About BCC Research.....	168
BCC Membership	168
BCC Custom Research	168

List of Tables

Summary Table Global Stem Cell Market, by Region, Through 2022 (\$ Millions).....	8
Table 1 Bioprinting Emerging Platforms	46
Table 2 Countries Engaged in the ISCBI Program, 2017	47
Table 3 Yamanaka’s Induced Pluripotent Stem-Related Patents, 2011	72
Table 4 Stem Cell Patents, by Type, 2011.....	73
Table 5 Global Healthcare Systems, 2017.....	77
Table 6 Companies Developing Stem Cell Therapies for Cardiovascular Diseases, 2017.....	85
Table 7 U.S. Statistics for Spinal Cord Injury, 2017	86
Table 8 Global Neurodegenerative Diseases, 2015	87
Table 9 U.S. Statistics for Diabetes, 2015	88
Table 10 Global Market for Diabetes Mellitus, Treatments and Devices, Through 2022 (\$ Billions).....	88
Table 11 Global Stem Cell Market, by Region, Through 2022 (\$ Millions)	91
Table 12 Stem Cell Market, by Country, Through 2022 (\$ Millions).....	91
Table 13 Potential U.S. Patient Populations for Cell-Based Therapies, 2016	92
Table 14 U.S. Stem Cell Therapy Market, Through 2022 (\$ Millions).....	93
Table 15 U.S. Stem Cell Research and Services Market, Through 2022 (\$ Millions)	93
Table 16 U.S. Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions)	94
Table 17 Canadian Stem Cell Therapy Market, Through 2022 (\$ Millions)	95
Table 18 Canadian Stem Cell Research and Services Market, Through 2022 (\$ Millions).....	95
Table 19 Canadian Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions)	95
Table 20 Brazilian Stem Cell Therapy Market, Through 2022 (\$ Millions)	97
Table 21 Brazilian Stem Cell Research and Services Market, Through 2022 (\$ Millions).....	97
Table 22 Brazilian Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions).....	97
Table 23 Mexican Stem Cell Therapy Market, Through 2022 (\$ Millions).....	98
Table 24 Mexican Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions).....	98
Table 25 European Stem Cell Market, by Country, Through 2022 (\$ Millions)	99
Table 26 European Statistics for Cardiovascular Disease, 2017	99
Table 27 European Rate of Death from Heart Disease, by Country, 2016 (Deaths per 100,000 Cases) ..	100
Table 28 European Statistics for Central Nervous System Disorders and Injuries, 2016	101
Table 29 European Statistics for Spinal Cord Injury and Parkinson’s Disease, by Country, 2016.....	101
Table 30 European Prevalence of Diabetic Patients, by Country, 2017 (No. of Patients)	102
Table 31 French Stem Cell Therapy Market, Through 2022 (\$ Millions)	102
Table 32 French Stem Cell Research and Services Market, Through 2022 (\$ Millions).....	103
Table 33 French Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions)	103
Table 34 German Stem Cell Therapy Market, Through 2022 (\$ Millions)	104
Table 35 German Stem Cell Research and Services Market, Through 2022 (\$ Millions).....	104
Table 36 German Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions)	104
Table 37 Italian Stem Cell Therapy Market, Through 2022 (\$ Millions)	105
Table 38 Italian Stem Cell Research and Services Market, Through 2022 (\$ Millions).....	106
Table 39 Italian Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions)	106
Table 40 Spanish Stem Cell Therapy Market, Through 2022 (\$ Millions).....	107
Table 41 Spanish Stem Cell Research and Services Market, Through 2022 (\$ Millions)	107
Table 42 Spanish Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions)	108
Table 43 U.K. Stem Cell Therapy Market, Through 2022 (\$ Millions).....	109
Table 44 U.K. Stem Cell Research and Services Market, Through 2022 (\$Millions)	109
Table 45 U.K. Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions).....	109
Table 46 China and India Statistics for Cardiovascular Disease, 2016.....	110

Table 47 Asia-Pacific Stem Cell Policies, 2017	111
Table 48 Asia-Pacific Stem Cell Market, by Country, Through 2022 (\$ Millions)	111
Table 49 Japanese Stem Cell Therapy Market, Through 2022 (\$ Millions)	112
Table 50 Japanese Stem Cell Research and Services Market, Through 2022 (\$ Millions).....	113
Table 51 Japanese Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions).....	113
Table 52 Chinese Stem Cell Therapy Market, Through 2022 (\$ Millions).....	116
Table 53 Chinese Stem Cell Research and Services Market, Through 2022 (\$ Millions).....	116
Table 54 Chinese Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions).....	116
Table 55 Potential Candidates for Stem Cell Therapy in India, 2016.....	117
Table 56 Indian Stem Cell Therapy Market, Through 2022 (\$ Millions)	118
Table 57 Indian Stem Cell Research and Services Market, Through 2022 (\$ Millions).....	118
Table 58 Indian Stem Cell Cord Blood Services Market, Through 2022 (\$ Millions)	118
Table 59 Stem Cell Market in the Rest of the World, Through 2022 (\$ Millions).....	119

List of Figures

Summary Figure Global Stem Cell Market, by Region, 2015-2022 (\$ Millions)..... 9
Figure 1 Early Development of Embryo 12



About BCC Research

About BCC Research

With our unparalleled 45-year history, BCC Research provides comprehensive analysis of global market sizing, forecasting and industry intelligence, covering markets where advances in science and technology are improving the quality, standard and sustainability of businesses, economies and lives.

BCC Membership

From market sizing and forecasts, to opportunity assessments and competitive analyses, our ever-expanding library gives you the data, insights and intelligence required to ensure your project is a success. Members benefit from ongoing, unlimited access to the category or collections of their choice, and most membership packages pay for themselves within two to three reports being accessed.

Did you buy this report? You may qualify to apply your purchase price towards a full membership. Call 866/285-7215 or e-mail info@bccresearch.com to request a demo.

BCC Custom Research

Our experts provide custom research projects to those working to identify new markets, introduce new products, validate existing market share, analyze competition and assess the potential for products to impact existing markets. With impressive academic credentials and broad and deep knowledge of global industrial markets, our independent analysts and consultants develop the facts, figures, analysis and assessments to inform the decisions that will move your company ahead. Confidential inquiries to: custom@bccresearch.com or 781/205-2429.

DISCLAIMER

The information developed in this report is intended to be as reliable as possible at the time of publication and is of a professional nature. This information does not constitute managerial, legal or accounting advice, nor should it be considered as a corporate policy guide, laboratory manual or an endorsement of any product, as much of the information is speculative in nature. BCC Research and the author assume no responsibility for any loss or damage that might result from reliance on the reported information or from its use.

ISBN: 978-1-62296-675-2
April 2018