

GLOBAL MARKETS AND TECHNOLOGIES FOR ADVANCED DRUG DELIVERY SYSTEMS



PHM006K
March 2016

Himani Singhi Wadhwa
Project Analyst

ISBN: 1-62296-254-0



BCC Research
49 Walnut Park, Building 2
Wellesley, MA 02481 USA
866-285-7215 (toll-free within the USA),
or (+1) 781-489-7301
www.bccresearch.com
information@bccresearch.com

TABLE OF CONTENTS

TOPIC	PAGE NO.
CHAPTER 1 INTRODUCTION	2
STUDY GOALS AND OBJECTIVES	2
REASONS FOR DOING THE STUDY	2
SCOPE OF REPORT	3
INTENDED AUDIENCE	3
INFORMATION SOURCES AND METHODOLOGY	3
ANALYST'S CREDENTIALS	4
RELATED BCC RESEARCH REPORTS	4
BCC RESEARCH WEBSITE	4
DISCLAIMER	4
CHAPTER 2 SUMMARY	7
<i>SUMMARY TABLE GLOBAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	7
<i>SUMMARY FIGURE GLOBAL ADVANCED DRUG DELIVERY MARKET BY REGION, 2014-2020 (\$ MILLIONS)</i>	8
CHAPTER 3 OVERVIEW	10
ADVANCED DRUG DELIVERY MARKET EVOLUTION AND DYNAMICS	10
ADVANCED DRUG DELIVERY INDUSTRY LIFE/GROWTH STAGES	11
FIRST GENERATION - CONTROLLED/MODIFIED RELEASE TECHNOLOGIES	11
SECOND GENERATION - NEW WAVE OF ADVANCED DRUG DELIVERY TECHNOLOGIES WITH EMERGENCE OF SMART DRUG DELIVERY	12
THIRD GENERATION - NEW FRONTIER OF ADVANCED DRUG DELIVERY WITH SIGNIFICANT ADVANCES IN MODIFIED DELIVERY SYSTEMS	12
MULTIPLE-RELEASE TECHNOLOGY MARKET	12
FIXED DOSE COMBINATION MULTIPLE RELEASE TECHNOLOGY - MAJOR PHASE OF NEXT GENERATION ADVANCED DRUG DELIVERY MARKET.	13
MARKET DRIVERS AND RESTRAINTS	14
GLOBAL ADVANCED DRUG DELIVERY MARKET ANALYSIS	16
<i>FIGURE 1 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY MARKET BY REGION, 2015 (%)</i>	16
<i>FIGURE 2 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS, 2015 (%)</i>	17
<i>FIGURE 3 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS BY ROUTE OF ADMINISTRATION (2015) (%)</i>	18
COMPETITIVE LANDSCAPE	20
PATENT ANALYSIS	21
<i>FIGURE 4 PATENT ANALYSIS BY PATENT JURISDICTION, 2014-DECEMBER 2015 (%)</i>	21
CHAPTER 4 ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS MARKET	24
<i>TABLE 1 GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	25
<i>TABLE 2 GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES MARKET BY TYPE, THROUGH 2020 (\$ MILLIONS)</i>	25
<i>FIGURE 5 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY RELEASE TECHNOLOGIES/SYSTEMS, 2015 (%)</i>	26
ADVANCED IMMEDIATE-RELEASE TECHNOLOGY	26

TOPIC	PAGE NO.
DRIVERS AND RESTRAINTS	29
<i>TABLE 3 GLOBAL ADVANCED IMMEDIATE-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	30
MODIFIED DRUG DELIVERY	30
<i>TABLE 4 GLOBAL MODIFIED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	31
<i>TABLE 5 GLOBAL MODIFIED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	32
TARGETED DRUG DELIVERY TECHNOLOGY	32
Drivers and Restraints	32
Market Analysis	33
Future Outlook	34
Market Players	34
<i>TABLE 6 GLOBAL TARGETED-RELEASE TECHNOLOGY MARKET BY DRUG DELIVERY VEHICLES, THROUGH 2020 (\$ MILLIONS)</i>	35
<i>TABLE 7 GLOBAL TARGETED-RELEASE TECHNOLOGY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)</i>	35
<i>TABLE 8 GLOBAL TARGETED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	36
EXTENDED DRUG RELEASE	36
<i>TABLE 9 GLOBAL EXTENDED-RELEASE TECHNOLOGY MARKET BY DRUG DELIVERY VEHICLE, THROUGH 2020 (\$ MILLIONS)</i>	37
<i>TABLE 10 GLOBAL EXTENDED-RELEASE TECHNOLOGY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)</i>	37
<i>TABLE 11 GLOBAL EXTENDED-RELEASE TECHNOLOGY MARKET BY TYPE, THROUGH 2020 (\$ MILLIONS)</i>	37
<i>TABLE 12 GLOBAL EXTENDED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	37
SUSTAINED AND CONTROLLED RELEASE DRUG DELIVERY SYSTEMS	38
Drivers and Restraints	39
Market Analysis and Future Outlook	40
Market Players	42
<i>TABLE 13 GLOBAL SUSTAINED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	42
<i>TABLE 14 GLOBAL CONTROLLED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	43
DELAYED RELEASE AND PULSATILE RELEASE DRUG DELIVERY TECHNOLOGY	43
Market Analysis	44
Drivers and Restraints	45
Market Players	45
<i>TABLE 15 GLOBAL DELAYED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	45
<i>TABLE 16 GLOBAL PULSATILE-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	46
CHAPTER 5 MARKET BY ROUTE OF ADMINISTRATION	48
<i>TABLE 17 GLOBAL ADVANCED DRUG DELIVERY MARKET BY ROUTES OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)</i>	48
<i>FIGURE 6 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS BY ROUTE OF ADMINISTRATION, 2015 (%)</i>	48

TOPIC	PAGE NO.
ORAL DRUG DELIVERY MARKET	49
MARKET DRIVERS AND RESTRAINTS/CHALLENGES	50
MARKET ANALYSIS - INNOVATIONS, DEVELOPMENTS AND KEY COMPETITIVE FACTORS	50
<i>TABLE 18 EXAMPLES OF ORAL FAST-DISSOLVED/DISINTEGRATED (FDTS) TECHNOLOGIES AND PRODUCTS</i>	51
Opportunities/Future Outlook	53
MARKET PLAYERS	54
<i>TABLE 19 GLOBAL ORAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	54
<i>PARENTERAL/INJECTABLE DRUG DELIVERY MARKET</i>	54
DRIVERS AND RESTRAINTS	56
MARKET ANALYSIS - INNOVATIONS, DEVELOPMENTS AND KEY COMPETITIVE FACTORS	56
FUTURE OUTLOOK/OPPORTUNITIES	59
MARKET PLAYERS	59
<i>TABLE 20 GLOBAL INJECTABLE ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	60
TOPICAL DRUG DELIVERY MARKET	60
MARKET ANALYSIS - DEVELOPMENTS AND INNOVATIONS	60
MARKET DRIVERS AND RESTRAINTS	61
MARKET PLAYERS	62
<i>TABLE 21 GLOBAL TOPICAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	62
TRANSDERMAL DRUG DELIVERY	62
MARKET DRIVERS AND RESTRAINTS	63
MARKET ANALYSIS - PRODUCT EXAMPLES, INNOVATION AND FUTURE OUTLOOK	63
FUTURE OUTLOOK/OPPORTUNITIES	66
MARKET PLAYERS	66
<i>TABLE 22 GLOBAL TRANSDERMAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	66
TRANSMUCOSAL MARKET	67
MARKET DRIVERS AND RESTRAINTS	67
MARKET PLAYERS	67
<i>TABLE 23 GLOBAL TRANSMUCOSAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	67
<i>TABLE 24 GLOBAL TRANSMUCOSAL ADVANCED DRUG DELIVERY MARKET BY TYPE, THROUGH 2020 (\$ MILLIONS)</i>	68
NASAL AND PULMONARY MARKET	68
Market Drivers and Analysis	69
<i>TABLE 25 GLOBAL TRANSMUCOSAL NASAL AND PULMONARY ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	70
OCULAR DRUG DELIVERY	70
Market Analysis	70
<i>TABLE 26 GLOBAL TRANSMUCOSAL OCULAR ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	71
ORAL - BUCCAL DRUG DELIVERY	71
Market Analysis	72

TOPIC	PAGE NO.
<i>TABLE 27 GLOBAL TRANSMUCOSAL ORAL BUCCAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	72
VAGINAL DRUG DELIVERY	73
<i>TABLE 28 GLOBAL TRANSMUCOSAL VAGINAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	73
RECTAL DRUG DELIVERY	73
<i>TABLE 29 GLOBAL TRANSMUCOSAL RECTAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	74
IMPLANTS DRUG DELIVERY	74
MARKET DRIVERS AND RESTRAINTS	74
MARKET ANALYSIS AND FUTURE OUTLOOK	75
MARKET PLAYERS	77
<i>TABLE 30 GLOBAL IMPLANTS ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	78
CONTRACEPTIVE DEVICES	78
<i>TABLE 31 GLOBAL CONTRACEPTIVE DEVICES FOR ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	79
CHAPTER 6 MARKET BY DRUG DELIVERY VEHICLES/CARRIERS	81
<i>TABLE 32 GLOBAL ADVANCED DRUG DELIVERY VEHICLES/CARRIERS MARKET BY TYPE, THROUGH 2020 (\$ MILLIONS)</i>	81
<i>FIGURE 7 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, 2015 (%)</i>	81
LIPOSOMES	82
MARKET ANALYSIS AND FUTURE OUTLOOK	83
<i>TABLE 33 GLOBAL LIPOSOMES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	84
POLYMERIC THERAPEUTICS	84
<i>TABLE 34 GLOBAL POLYMERIC THERAPEUTICS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	85
<i>TABLE 35 GLOBAL POLYMERIC THERAPEUTICS MARKET IN ADVANCED DRUG DELIVERY BY TYPE, THROUGH 2020 (\$ MILLIONS)</i>	85
MICELLES AND DENDRIMERS	85
Polymeric Micelles (Micelles)	85
Market Analysis	86
<i>TABLE 36 GLOBAL POLYMERIC MICELLES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	86
Dendrimers	87
Market Analysis	87
<i>TABLE 37 GLOBAL DENDRIMERS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	88
POLYMERS (POLYMERIC DRUG DELIVERY)	88
Market Analysis	88
Reservoir-based Systems	89
Monolithic Matrix Systems	89
Polymer-drug Conjugate Systems	90
<i>TABLE 38 GLOBAL POLYMERIC DRUGS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	90
<i>TABLE 39 GLOBAL POLYMERIC DRUGS MARKET IN ADVANCED DRUG DELIVERY BY TYPE OF DRUG SYSTEM, THROUGH 2020 (\$ MILLIONS)</i>	91

TOPIC	PAGE NO.
NANOCARRIERS/NANOPARTICLES	91
TABLE 40 GLOBAL NANOCARRIERS/NANOPARTICLES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	92
MICROPARTICLES/MICROSPHERES	92
TABLE 41 GLOBAL MICROPARTICLES/MICROSPHERES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	94
MONOCLONAL ANTIBODIES (MABS)	94
TABLE 42 GLOBAL MONOCLONAL ANTIBODIES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	95
PRODRUGS	96
TABLE 43 GLOBAL PRODRUGS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	97
TABLE 44 GLOBAL PRODRUGS MARKET IN ADVANCED DRUG DELIVERY BY TYPE, THROUGH 2020 (\$ MILLIONS)	98
OTHERS	98
TABLE 45 GLOBAL OTHER DRUG DELIVERY VEHICLES/CARRIERS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	98
CHAPTER 7 MARKET BY APPLICATIONS	101
TABLE 46 GLOBAL ADVANCED DRUG DELIVERY MARKET BY APPLICATION, THROUGH 2020 (\$ MILLIONS)	101
FIGURE 8 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS BY APPLICATION, 2015 (%)	101
CARDIOVASCULAR	102
TABLE 47 GLOBAL ADVANCED DRUG DELIVERY CARDIOVASCULAR APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	104
ONCOLOGY MARKET	104
TABLE 48 GLOBAL ADVANCED DRUG DELIVERY ONCOLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	106
GASTROINTESTINAL DISORDERS	107
TABLE 49 GLOBAL ADVANCED DRUG DELIVERY GASTROINTESTINAL APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	108
UROLOGY	108
TABLE 50 GLOBAL ADVANCED DRUG DELIVERY UROLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	109
DIABETES	110
TABLE 51 GLOBAL ADVANCED DRUG DELIVERY DIABETES APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	111
DERMATOLOGY	111
TABLE 52 GLOBAL ADVANCED DRUG DELIVERY DERMATOLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	112
CENTRAL NERVOUS SYSTEM	112
TABLE 53 GLOBAL ADVANCED DRUG DELIVERY CENTRAL NERVOUS SYSTEM APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	114
RESPIRATORY DRUG DELIVERY SYSTEMS	114
TABLE 54 GLOBAL ADVANCED DRUG DELIVERY RESPIRATORY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	115
INFLAMMATORY DISEASES AND ALLERGIES	115
TABLE 55 GLOBAL ADVANCED DRUG DELIVERY INFLAMMATORY DISEASES AND ALLERGIES APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	116
OPHTHALMOLOGY	116

TOPIC	PAGE NO.
<i>TABLE 56 GLOBAL ADVANCED DRUG DELIVERY OPHTHALMOLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	118
VIRAL AND BACTERIAL DISEASES	118
<i>TABLE 57 GLOBAL ADVANCED DRUG DELIVERY VIRAL AND BACTERIAL DISEASES APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	119
HORMONE REPLACEMENT THERAPY AND GYNECOLOGY	119
<i>TABLE 58 GLOBAL ADVANCED DRUG DELIVERY HORMONAL REPLACEMENT THERAPY AND GYNECOLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	120
OTHER THERAPEUTIC CATEGORIES	120
<i>TABLE 59 GLOBAL ADVANCED DRUG DELIVERY OTHER THERAPEUTIC APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	121
CHAPTER 8 COMPETITIVE DEVELOPMENTS	123
INTRODUCTION	123
<i>FIGURE 9 DEVELOPMENTS IN GLOBAL PATIENT MONITORING DEVICES MARKET, 2013-DECEMBER 2015 (%)</i>	124
<i>TABLE 60 DEVELOPMENTS - PRODUCT LAUNCH/APPROVAL/UPDATE, 2013- DEC 2015</i>	125
<i>TABLE 61 DEVELOPMENTS - COLLABORATIONS/PARTNERSHIPS/AGREEMENTS, 2013- DEC 2015</i>	133
<i>TABLE 62 DEVELOPMENTS - ACQUISITIONS AND MERGERS, 2013- DEC 2015</i>	138
<i>TABLE 63 DEVELOPMENTS - MISCELLANEOUS, 2013- OCT 2015</i>	143
CHAPTER 9 REGIONAL ANALYSIS	146
NORTH AMERICA	146
<i>TABLE 64 NORTH AMERICAN ADVANCED DRUG DELIVERY MARKET BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)</i>	147
<i>TABLE 65 NORTH AMERICAN ADVANCED DRUG DELIVERY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)</i>	147
<i>TABLE 66 NORTH AMERICAN ADVANCED DRUG DELIVERY MARKET BY APPLICATION, THROUGH 2020 (\$ MILLIONS)</i>	148
<i>TABLE 67 NORTH AMERICAN ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, THROUGH 2020 (\$ MILLIONS)</i>	148
EUROPE	149
<i>TABLE 68 EUROPEAN ADVANCED DRUG DELIVERY MARKET BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)</i>	149
<i>TABLE 69 EUROPEAN ADVANCED DRUG DELIVERY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)</i>	150
<i>TABLE 70 EUROPEAN ADVANCED DRUG DELIVERY MARKET BY APPLICATIONS, THROUGH 2020 (\$ MILLIONS)</i>	150
<i>TABLE 71 EUROPEAN ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, THROUGH 2020 (\$ MILLIONS)</i>	151
ASIA-PACIFIC	151
<i>TABLE 72 ASIA-PACIFIC ADVANCED DRUG DELIVERY MARKET BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)</i>	152
<i>TABLE 73 ASIA-PACIFIC ADVANCED DRUG DELIVERY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)</i>	152
<i>TABLE 74 ASIA-PACIFIC ADVANCED DRUG DELIVERY MARKET BY APPLICATIONS, THROUGH 2020 (\$ MILLIONS)</i>	153

TOPIC	PAGE NO.
<i>TABLE 75 ASIA-PACIFIC ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, THROUGH 2020 (\$ MILLIONS)</i>	153
REST OF THE WORLD (ROW)	154
<i>TABLE 76 ROW ADVANCED DRUG DELIVERY MARKET BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)</i>	154
<i>TABLE 77 ROW ADVANCED DRUG DELIVERY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)</i>	155
<i>TABLE 78 ROW ADVANCED DRUG DELIVERY MARKET BY APPLICATIONS, THROUGH 2020 (\$ MILLIONS)</i>	155
<i>TABLE 79 ROW ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, THROUGH 2020 (\$ MILLIONS)</i>	156
CHAPTER 10 APPENDIX	158
<i>TABLE 80 LIST (EXAMPLES) OF PATENTS, 2015</i>	158
<i>TABLE 81 LIST (EXAMPLES) PATENTS, 2014</i>	167
CHAPTER 11 COMPANY PROFILES	180
3M COMPANY	180
ABBOTT LABORATORIES	180
ALLERGAN PLC	181
AKELA PHARMA INC.	182
ALCON INC. (NOVARTIS COMPANY)	182
AMGEN INC.	182
A.P. PHARMA/ HERON THERAPEUTICS, INC.	183
APTALIS PHARMA INC. /ADARE PHARMACEUTICALS	183
ALKERMES	184
ASTELLAS PHARMA INC.	184
ASTRAZENECA PLC	185
BAUSCH & LOMB	185
BAXTER INTERNATIONAL INC.	186
BAYER HEALTHCARE PHARMACEUTICALS	186
BIOGEN IDEC	187
BIOSANTE PHARMACEUTICALS INC.	187
BOEHRINGER INGELHEIM	187
BOSTON SCIENTIFIC	188
BRISTOL-MYERS SQUIBB	189
CAPSUGEL	189
CATALENT	190
CELGENE CORP.	190
EISAI CO. LTD.	190
ELAN DRUG TECHNOLOGIES/PERRIGO COMPANY	191
ENZON PHARMACEUTICALS	192
ELIXIR MEDICAL CORP.	192
FLAMEL TECHNOLOGIES	193
GENENTECH INC.	193
GENEREX BIOTECHNOLOGY CORP.	194
GENZYME CORP.	194
GILEAD SCIENCES INC.	195

TOPIC	PAGE NO.
GLAXOSMITHKLINE PLC	195
HISAMITSU PHARMACEUTICAL CO. INC.	196
ELI LILLY & IMCLONE SYSTEMS	196
JANSSEN BIOTECH INC.	197
JOHNSON & JOHNSON	197
KEMPHARM INC.	198
KYOTO MEDICAL PLANNING CO. LTD.	198
MANNKIND CORP.	199
MEDTRONIC	199
MERCK & CO.	200
MYLAN LABORATORIES INC.	200
NEKTAR THERAPEUTICS	201
NEWGEN BIOPHARMA	201
NOVARTIS AG	201
NOVAVAX INC.	202
NOVEN PHARMACEUTICALS INC.	202
PAR PHARMACEUTICAL COMPANIES INC.	203
PDL BIOPHARMA INC.	203
PFIZER INC.	204
ROCHE HOLDING AG	204
SANOFI SA	205
SKYEPHARMA	205
TEVA PHARMACEUTICAL INDUSTRIES LTD.	206
THERAJECT INC.	206
VALEANT PHARMACEUTICALS INTERNATIONAL INC.	206
XEL PHARMACEUTICALS INC.	207

LIST OF TABLES

TABLE HEADING	PAGE NO.
SUMMARY TABLE GLOBAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	7
TABLE 1 GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	25
TABLE 2 GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES MARKET BY TYPE, THROUGH 2020 (\$ MILLIONS)	25
TABLE 3 GLOBAL ADVANCED IMMEDIATE-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	30
TABLE 4 GLOBAL MODIFIED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	31
TABLE 5 GLOBAL MODIFIED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	32
TABLE 6 GLOBAL TARGETED-RELEASE TECHNOLOGY MARKET BY DRUG DELIVERY VEHICLES, THROUGH 2020 (\$ MILLIONS)	35
TABLE 7 GLOBAL TARGETED-RELEASE TECHNOLOGY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)	35
TABLE 8 GLOBAL TARGETED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	36
TABLE 9 GLOBAL EXTENDED-RELEASE TECHNOLOGY MARKET BY DRUG DELIVERY VEHICLE, THROUGH 2020 (\$ MILLIONS)	37
TABLE 10 GLOBAL EXTENDED-RELEASE TECHNOLOGY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)	37
TABLE 11 GLOBAL EXTENDED-RELEASE TECHNOLOGY MARKET BY TYPE, THROUGH 2020 (\$ MILLIONS)	37
TABLE 12 GLOBAL EXTENDED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	37
TABLE 13 GLOBAL SUSTAINED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	42
TABLE 14 GLOBAL CONTROLLED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	43
TABLE 15 GLOBAL DELAYED-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	45
TABLE 16 GLOBAL PULSATILE-RELEASE TECHNOLOGY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	46
TABLE 17 GLOBAL ADVANCED DRUG DELIVERY MARKET BY ROUTES OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)	48
TABLE 18 EXAMPLES OF ORAL FAST-DISSOLVED/DISINTEGRATED (FDTS) TECHNOLOGIES AND PRODUCTS	51
TABLE 19 GLOBAL ORAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	54
TABLE 20 GLOBAL INJECTABLE ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	60
TABLE 21 GLOBAL TOPICAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	62
TABLE 22 GLOBAL TRANSDERMAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	66
TABLE 23 GLOBAL TRANSMUCOSAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	67
TABLE 24 GLOBAL TRANSMUCOSAL ADVANCED DRUG DELIVERY MARKET BY TYPE, THROUGH 2020 (\$ MILLIONS)	68

TABLE HEADING	PAGE NO.
TABLE 25 GLOBAL TRANSMUCOSAL NASAL AND PULMONARY ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	70
TABLE 26 GLOBAL TRANSMUCOSAL OCULAR ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	71
TABLE 27 GLOBAL TRANSMUCOSAL ORAL BUCCAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	72
TABLE 28 GLOBAL TRANSMUCOSAL VAGINAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	73
TABLE 29 GLOBAL TRANSMUCOSAL RECTAL ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	74
TABLE 30 GLOBAL IMPLANTS ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	78
TABLE 31 GLOBAL CONTRACEPTIVE DEVICES FOR ADVANCED DRUG DELIVERY MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	79
TABLE 32 GLOBAL ADVANCED DRUG DELIVERY VEHICLES/CARRIERS MARKET BY TYPE, THROUGH 2020 (\$ MILLIONS)	81
TABLE 33 GLOBAL LIPOSOMES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	84
TABLE 34 GLOBAL POLYMERIC THERAPEUTICS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	85
TABLE 35 GLOBAL POLYMERIC THERAPEUTICS MARKET IN ADVANCED DRUG DELIVERY BY TYPE, THROUGH 2020 (\$ MILLIONS)	85
TABLE 36 GLOBAL POLYMERIC MICELLES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	86
TABLE 37 GLOBAL DENDRIMERS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	88
TABLE 38 GLOBAL POLYMERIC DRUGS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	90
TABLE 39 GLOBAL POLYMERIC DRUGS MARKET IN ADVANCED DRUG DELIVERY BY TYPE OF DRUG SYSTEM, THROUGH 2020 (\$ MILLIONS)	91
TABLE 40 GLOBAL NANOCARRIERS/NANOPARTICLES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	92
TABLE 41 GLOBAL MICROPARTICLES/MICROSPHERES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	94
TABLE 42 GLOBAL MONOCLONAL ANTIBODIES MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	95
TABLE 43 GLOBAL PRODRUGS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	97
TABLE 44 GLOBAL PRODRUGS MARKET IN ADVANCED DRUG DELIVERY BY TYPE, THROUGH 2020 (\$ MILLIONS)	98
TABLE 45 GLOBAL OTHER DRUG DELIVERY VEHICLES/CARRIERS MARKET IN ADVANCED DRUG DELIVERY BY REGION, THROUGH 2020 (\$ MILLIONS)	98
TABLE 46 GLOBAL ADVANCED DRUG DELIVERY MARKET BY APPLICATION, THROUGH 2020 (\$ MILLIONS)	101
TABLE 47 GLOBAL ADVANCED DRUG DELIVERY CARDIOVASCULAR APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	104
TABLE 48 GLOBAL ADVANCED DRUG DELIVERY ONCOLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	106
TABLE 49 GLOBAL ADVANCED DRUG DELIVERY GASTROINTESTINAL APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	108
TABLE 50 GLOBAL ADVANCED DRUG DELIVERY UROLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	109

TABLE HEADING	PAGE NO.
TABLE 51 GLOBAL ADVANCED DRUG DELIVERY DIABETES APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	111
TABLE 52 GLOBAL ADVANCED DRUG DELIVERY DERMATOLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	112
TABLE 53 GLOBAL ADVANCED DRUG DELIVERY CENTRAL NERVOUS SYSTEM APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	114
TABLE 54 GLOBAL ADVANCED DRUG DELIVERY RESPIRATORY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	115
TABLE 55 GLOBAL ADVANCED DRUG DELIVERY INFLAMMATORY DISEASES AND ALLERGIES APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	116
TABLE 56 GLOBAL ADVANCED DRUG DELIVERY OPHTHALMOLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	118
TABLE 57 GLOBAL ADVANCED DRUG DELIVERY VIRAL AND BACTERIAL DISEASES APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	119
TABLE 58 GLOBAL ADVANCED DRUG DELIVERY HORMONAL REPLACEMENT THERAPY AND GYNECOLOGY APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	120
TABLE 59 GLOBAL ADVANCED DRUG DELIVERY OTHER THERAPEUTIC APPLICATIONS MARKET BY REGION, THROUGH 2020 (\$ MILLIONS)	121
TABLE 60 DEVELOPMENTS - PRODUCT LAUNCH/APPROVAL/UPDATE, 2013- DEC 2015	125
TABLE 61 DEVELOPMENTS - COLLABORATIONS/PARTNERSHIPS/AGREEMENTS, 2013- DEC 2015	133
TABLE 62 DEVELOPMENTS - ACQUISITIONS AND MERGERS, 2013- DEC 2015	138
TABLE 63 DEVELOPMENTS - MISCELLANEOUS, 2013- OCT 2015	143
TABLE 64 NORTH AMERICAN ADVANCED DRUG DELIVERY MARKET BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)	147
TABLE 65 NORTH AMERICAN ADVANCED DRUG DELIVERY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)	147
TABLE 66 NORTH AMERICAN ADVANCED DRUG DELIVERY MARKET BY APPLICATION, THROUGH 2020 (\$ MILLIONS)	148
TABLE 67 NORTH AMERICAN ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, THROUGH 2020 (\$ MILLIONS)	148
TABLE 68 EUROPEAN ADVANCED DRUG DELIVERY MARKET BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)	149
TABLE 69 EUROPEAN ADVANCED DRUG DELIVERY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)	150
TABLE 70 EUROPEAN ADVANCED DRUG DELIVERY MARKET BY APPLICATIONS, THROUGH 2020 (\$ MILLIONS)	150
TABLE 71 EUROPEAN ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, THROUGH 2020 (\$ MILLIONS)	151
TABLE 72 ASIA-PACIFIC ADVANCED DRUG DELIVERY MARKET BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)	152
TABLE 73 ASIA-PACIFIC ADVANCED DRUG DELIVERY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)	152
TABLE 74 ASIA-PACIFIC ADVANCED DRUG DELIVERY MARKET BY APPLICATIONS, THROUGH 2020 (\$ MILLIONS)	153
TABLE 75 ASIA-PACIFIC ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, THROUGH 2020 (\$ MILLIONS)	153
TABLE 76 ROW ADVANCED DRUG DELIVERY MARKET BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)	154
TABLE 77 ROW ADVANCED DRUG DELIVERY MARKET BY ROUTE OF ADMINISTRATION, THROUGH 2020 (\$ MILLIONS)	155

TABLE HEADING	PAGE NO.
TABLE 78 ROW ADVANCED DRUG DELIVERY MARKET BY APPLICATIONS, THROUGH 2020 (\$ MILLIONS)	155
TABLE 79 ROW ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, THROUGH 2020 (\$ MILLIONS)	156
TABLE 80 LIST (EXAMPLES) OF PATENTS, 2015	158
TABLE 81 LIST (EXAMPLES) PATENTS, 2014	167

LIST OF FIGURES

FIGURE TITLE	PAGE NO.
SUMMARY FIGURE GLOBAL ADVANCED DRUG DELIVERY MARKET BY REGION, 2014-2020 (\$ MILLIONS)	8
FIGURE 1 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY MARKET BY REGION, 2015 (%)	16
FIGURE 2 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS, 2015 (%)	17
FIGURE 3 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS BY ROUTE OF ADMINISTRATION (2015) (%)	18
FIGURE 4 PATENT ANALYSIS BY PATENT JURISDICTION, 2014-DECEMBER 2015 (%)	21
FIGURE 5 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY RELEASE TECHNOLOGIES/SYSTEMS, 2015 (%)	26
FIGURE 6 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS BY ROUTE OF ADMINISTRATION, 2015 (%)	48
FIGURE 7 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY MARKET BY DRUG VEHICLES/CARRIERS, 2015 (%)	81
FIGURE 8 MARKET SHARE IN GLOBAL ADVANCED DRUG DELIVERY TECHNOLOGIES/SYSTEMS BY APPLICATION, 2015 (%)	101
FIGURE 9 DEVELOPMENTS IN GLOBAL PATIENT MONITORING DEVICES MARKET, 2013-DECEMBER 2015 (%)	124