

CHAPTER 1: INTRODUCTION	1
STUDY OBJECTIVES.....	1
REASONS FOR DOING THIS STUDY	1
INTENDED AUDIENCE.....	1
SCOPE OF THE STUDY	2
METHODOLOGY	2
INFORMATION SOURCES.....	2
ABOUT THE AUTHOR.....	2
RELATED REPORTS	3
BCC ONLINE SERVICES.....	3
DISCLAIMER	3
CHAPTER 2: SUMMARY	4
SUMMARY.....	4
<i>SUMMARY TABLE GLOBAL SALES OF LIVER DISEASE</i> <i>TREATMENTS, THROUGH 2014 (\$ MILLIONS)</i>	5
<i>SUMMARY FIGURE GLOBAL SALES OF LIVER DISEASE</i> <i>TREATMENTS, 2007-2014 (\$ MILLIONS)</i>	6
CHAPTER 3: OVERVIEW	7
DEFINITIONS	7
THE LIVER.....	7
LIVER FUNCTIONS.....	7
Metabolism.....	7
Drug Disposition.....	8
Bile Formation	8
Other Functions.....	8
COMMON SYMPTOMS OF LIVER DISEASE	8
Jaundice	9
Cholestasis	9
Liver Enlargement	9
Ascites	9
Portal Hypertension	10
Liver Encephalopathy	10
Liver Failure	10
Other Common Symptoms	10
LIVER DISEASES	11
<i>TABLE 1 TYPES OF LIVER DISEASES</i>	11
VIRUS-INDUCED LIVER DISEASE.....	12
Acute Hepatitis	12
Hepatitis A	13
Hepatitis B	13
Hepatitis C	14
Hepatitis D.....	14

Chronic Hepatitis	15
Alcohol-induced Chronic Hepatitis	15
Chronic Active Hepatitis	15
Chronic Persistent Hepatitis	15
LIVER TUMORS	16
Benign Liver Tumors	16
Hepatocellular Adenoma	16
Hemangioma	17
Malignant Liver Tumors	18
Hepatocellular Carcinoma	18
Metastatic Liver Cancer	18
CONGENITAL LIVER DEFECTS	19
Biliary Atresia	19
Choledochal Cyst	19
AUTOIMMUNE LIVER DISORDERS	20
Hemochromatosis	20
Wilson's Disease	21
Autoimmune Hepatitis	22
ALCOHOL-INDUCED LIVER DISEASE	22
Fatty Liver	23
Alcoholic Hepatitis	23
Alcoholic Cirrhosis	24
CHRONIC LIVER DISEASE	24
Cirrhosis	24
Fibrosis	25
NON-ALCOHOLIC FATTY LIVER	26
CHAPTER 4: REGULATORY ISSUES	27
TABLE 2 APPROVED DRUGS USED TO TREAT LIVER DISEASES, 2005–2008	27
TABLE 2 (CONTINUED)	28
TABLE 3 NUMBER OF NEW APPROVALS FOR DRUGS USED TO TREAT LIVER DISEASES, 2005–2008	28
FIGURE 1 NUMBER OF NEW APPROVALS FOR DRUGS USED TO TREAT LIVER DISEASES, 2005–2008	28
TABLE 4 NEW DRUG APPLICATIONS FOR DRUGS USED TO TREAT LIVER DISEASES, 2005–2008	29
TABLE 5 RECALLS OF DRUGS USED TO TREAT LIVER DISEASES, 2005–2008	29
CHAPTER 5: PREVALENCE	30
UNITED STATES	30
UNITED KINGDOM	31
REST OF THE WORLD	31
PREVALENCE OF A FEW LIVER DISEASES	31

HEPATITIS	31
United States	32
<i>TABLE 6 HEPATITIS BURDEN IN THE UNITED STATES (2005–2006)</i>	32
<i>TABLE 7 INCIDENCE OF ACUTE HEPATITIS BY SEX AND AGE IN THE UNITED STATES (2006)</i>	33
CIRRHOSIS	33
LIVER CANCER OR HEPATOCELLULAR CARCINOMA	33
NON-ALCOHOLIC FATTY LIVER.....	34
 CHAPTER 6: CLASSIFICATION OF THERAPIES BY DISEASE.....	35
VIRUS-INDUCED LIVER DISEASE/HEPATITIS	35
VIRAL VACCINES.....	35
<i>TABLE 8 VACCINES FOR HEPATITIS A PREVENTION</i>	35
<i>TABLE 9 VACCINES FOR HEPATITIS B PREVENTION</i>	36
ANTIVIRAL DRUGS	36
Nucleoside Analogs.....	36
<i>TABLE 10 NUCLEOSIDE ANALOGS USED TO TREAT HEPATITIS</i>	37
Nucleotide Analogs.....	37
<i>TABLE 11 NUCLEOTIDE ANALOGS USED TO TREAT HEPATITIS</i>	37
<i>TABLE 12 PROTEASE INHIBITORS USED TO TREAT HEPATITIS</i>	38
INTERFERON.....	38
<i>TABLE 13 INTERFERONS USED TO TREAT HEPATITIS</i>	38
IMMUNE GLOBULINS.....	39
<i>TABLE 14 IMMUNE GLOBULINS USED TO TREAT HEPATITIS</i>	39
LIVER TUMORS/ LIVER CANCER	39
CHEMOTHERAPEUTIC DRUGS.....	40
<i>TABLE 15 CHEMOTHERAPUTIC DRUGS USED TO TREAT LIVER CANCER</i>	40
TARGETED THERAPY	41
<i>TABLE 16 TARGETED THERAPY USED TO TREAT LIVER CANCER</i>	41
CONGENITAL LIVER DEFECTS	41
AUTOIMMUNE LIVER DISORDERS.....	41
<i>TABLE 17 DRUGS USED TO TREAT WILSON'S DISEASE</i>	42
CORTICOSTEROIDS	43
<i>TABLE 18 CORTICOSTEROIDS USED TO TREAT AUTOIMMUNE HEPATITIS</i>	43
IMMUNOSUPPRESSIVE AGENTS	43
<i>TABLE 19 IMMUNOSUPPRESSIVE AGENTS USED TO TREAT AUTOIMMUNE HEPATITIS</i>	43
ANTIMETABOLITES	43
<i>TABLE 20 ANTI-METABOLITES USED TO TREAT AUTOIMMUNE HEPATITIS</i>	43
ALCOHOL-INDUCED LIVER DISEASE.....	44
ANABOLIC STEROIDS.....	44

<i>TABLE 21 ANABOLIC STEROIDS USED TO TREAT ALCOHOLIC LIVER DAMAGE</i>	44
ALCOHOL ABUSE DRUGS	44
<i>TABLE 22 ALCOHOL ABUSE DRUGS USED TO TREAT ALCOHOLIC LIVER DAMAGE</i>	44
CHRONIC LIVER DISEASE	44
ANTI-REJECTION MEDICATION	45
<i>TABLE 23 ANTI-REJECTION MEDICATIONS</i>	45
ANTI-INFECTIVES	45
<i>TABLE 24 ANTI-INFECTIVES</i>	45
ANTIFUNGAL PROPHYLAXIS.....	46
<i>TABLE 25 ANTIFUNGAL PROPHYLAXIS FOR LIVER TRANSPLANT RECIPIENTS</i>	46
NON-ALCOHOLIC FATTY LIVER	46
GALLSTONE SOLUBILIZING AGENTS.....	47
<i>TABLE 26 GALLSTONE SOLUBILIZING AGENTS USED TO TREAT NON-ALCOHOLIC FATTY LIVER DISEASE</i>	47
OTHER DRUGS	47
<i>TABLE 27 OTHER DRUGS USED TO TREAT NON-ALCOHOLIC FATTY LIVER DISEASE</i>	47
 CHAPTER 7: INDUSTRY STRUCTURE	 48
HEPATITIS.....	48
HEPATITIS VACCINE	48
<i>TABLE 28 HEPATITIS VACCINE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	48
<i>FIGURE 2 HEPATITIS VACCINE: MARKET SHARE BY MANUFACTURER, 2008</i>	49
NUCLEOSIDE ANALOGS	49
<i>TABLE 29 NUCLEOSIDE ANALOGS TO TREAT HEPATITIS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	49
<i>FIGURE 3 NUCLEOSIDE ANALOGS TO TREAT HEPATITIS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	50
NUCLEOTIDE ANALOGS	50
<i>TABLE 30 NUCLEOTIDE ANALOGS TO TREAT HEPATITIS: MARKET SHARE BY MANUFACTURER: 2008 (%)</i>	50
<i>FIGURE 4 NUCLEOTIDE ANALOGS TO TREAT HEPATITIS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	51
INTERFERONS	51
<i>TABLE 31 INTERFERONS TO TREAT HEPATITIS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	51
<i>FIGURE 5 INTERFERONS TO TREAT HEPATITIS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	52
IMMUNE GLOBULINS.....	52

<i>TABLE 32 IMMUNE GLOBULINS TO TREAT HEPATITIS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	52
<i>FIGURE 6 IMMUNE GLOBULINS TO TREAT HEPATITIS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	53
LIVER TUMORS.....	53
CHEMOTHERAPY	53
<i>TABLE 33 CHEMOTHERAPY TO TREAT LIVER TUMORS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	53
<i>FIGURE 7 CHEMOTHERAPY TO TREAT LIVER TUMORS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	54
TARGETED THERAPY	54
<i>TABLE 34 TARGETED THERAPY TO TREAT LIVER TUMORS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	54
<i>FIGURE 8 TARGETED THERAPY TO TREAT LIVER TUMORS: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	55
AUTOIMMUNE DISEASES	55
CHELATING AGENTS.....	55
<i>TABLE 35 CHELATING AGENTS TO TREAT AUTOIMMUNE LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	55
<i>FIGURE 9 CHELATING AGENTS TO TREAT AUTOIMMUNE LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	56
CORTICOSTEROIDS	56
<i>TABLE 36 CORTICOSTEROIDS TO TREAT AUTOIMMUNE LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	56
<i>FIGURE 10 CORTICOSTEROIDS TO TREAT AUTOIMMUNE LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	57
IMMUNOSUPPRESSIVE AGENTS	57
<i>TABLE 37 IMMUNOSUPPRESSIVE AGENTS TO TREAT AUTOIMMUNE LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	57
<i>FIGURE 11 IMMUNOSUPPRESSIVE AGENTS TO TREAT AUTOIMMUNE LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	58
ANTIMETABOLITES	58
<i>TABLE 38 ANTIMETABOLITES TO TREAT AUTOIMMUNE LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	58
<i>FIGURE 12 ANTIMETABOLITES TO TREAT AUTOIMMUNE LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	59
ALCOHOL-INDUCED LIVER DISEASES	59
ANABOLIC STEROIDS.....	59
<i>TABLE 39 ANABOLIC STEROIDS TO TREAT ALCOHOL-INDUCED LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	59
<i>FIGURE 13 ANABOLIC STEROIDS TO TREAT ALCOHOL-INDUCED LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%)</i>	60

ALCOHOL ABUSE DRUGS	60
<i>TABLE 40 ALCOHOL ABUSE DRUGS: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>60</i>
<i>FIGURE 14 ALCOHOL ABUSE DRUGS: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>61</i>
CHRONIC LIVER DISEASE	61
ANTI-REJECTION MEDICATION	61
<i>TABLE 41 ANTI-REJECTION MEDICATION TO TREAT CHRONIC LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>61</i>
<i>FIGURE 15 ANTI-REJECTION MEDICATION TO TREAT CHRONIC LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>62</i>
ANTI-INFECTIVES	62
<i>TABLE 42 ANTI-INFECTIVES TO TREAT CHRONIC LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>62</i>
<i>FIGURE 16 ANTI-INFECTIVES TO TREAT CHRONIC LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>63</i>
ANTIFUNGAL PROPHYLAXIS.....	63
<i>TABLE 43 ANTIFUNGAL PROPHYLAXIS TO TREAT CHRONIC LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>63</i>
<i>FIGURE 17 ANTIFUNGAL PROPHYLAXIS TO TREAT CHRONIC LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>64</i>
NON-ALCOHOLIC FATTY LIVER DISEASE.....	64
GALLSTONE STABILIZING AGENTS.....	64
<i>TABLE 44 GALLSTONE STABILIZING AGENTS: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>64</i>
<i>FIGURE 18 GALLSTONE STABILIZING AGENTS: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>65</i>
OTHER DRUGS	65
<i>TABLE 45 OTHER DRUGS USED TO TREAT NON-ALCOHOLIC FATTY LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>65</i>
<i>FIGURE 19 OTHER DRUGS USED TO TREAT NON-ALCOHOLIC FATTY LIVER DISEASE: MARKET SHARE BY MANUFACTURER, 2008 (%).....</i>	<i>66</i>
CHAPTER 8: DEMAND AND USE	67
LIFE EXPECTANCY.....	67
LACK OF KNOWLEDGE.....	67
LACK OF TREATMENT OPTIONS	67
INCREASING NUMBER OF PATIENTS	68
RESEARCH AND DEVELOPMENT	68
INITIATIVES OF VARIOUS ORGANIZATIONS TO INCREASE AWARENESS	68
INITIATIVES OF VARIOUS ORGANIZATIONS ... (CONTINUED).....	69

CHAPTER 9: MARKET ANALYSIS.....	70
<i>TABLE 46 GLOBAL SALES OF DRUGS USED TO TREAT LIVER DISEASES, BY DISEASE TYPE, THROUGH 2014 (\$ MILLIONS)</i>	70
<i>FIGURE 20 GLOBAL SALES OF DRUGS USED TO TREAT LIVER DISEASES, BY DISEASE TYPE, 2007-2014 (\$ MILLIONS)</i>	71
HEPATITIS.....	71
MARKET SIZE.....	72
<i>TABLE 47 GLOBAL SALES OF DRUGS TO TREAT HEPATITIS, THROUGH 2014 (\$ MILLIONS)</i>	72
<i>FIGURE 21 GLOBAL SALES OF DRUGS TO TREAT HEPATITIS, 2007-2014 (\$ MILLIONS)</i>	73
MARKET OVERVIEW.....	73
Market Overview (Continued)	74
LIVER TUMORS.....	75
MARKET SIZE.....	75
<i>TABLE 48 GLOBAL SALES OF DRUGS TO TREAT LIVER TUMORS, THROUGH 2014 (\$ MILLIONS)</i>	76
<i>FIGURE 22 GLOBAL SALES OF DRUGS TO TREAT LIVER TUMORS, 2007-2014 (\$ MILLIONS)</i>	76
MARKET OVERVIEW.....	76
AUTOIMMUNE DISEASES	77
MARKET SIZE.....	78
<i>TABLE 49 GLOBAL SALES OF DRUGS TO TREAT AUTOIMMUNE DISEASES, THROUGH 2014 (\$ MILLIONS)</i>	78
<i>FIGURE 23 GLOBAL SALES OF DRUGS TO TREAT AUTOIMMUNE DISEASES, THROUGH 2014 (\$ MILLIONS)</i>	78
MARKET OVERVIEW.....	79
ALCOHOL-INDUCED LIVER DISEASE.....	79
MARKET SIZE.....	80
<i>TABLE 50 GLOBAL SALES OF DRUGS TO TREAT ALCOHOL-INDUCED LIVER DISEASES, THROUGH 2014 (\$ MILLIONS)</i>	80
<i>FIGURE 24 GLOBAL SALES OF DRUGS TO TREAT ALCOHOL-INDUCED LIVER DISEASES, 2007-2014 (\$ MILLIONS)</i>	81
MARKET OVERVIEW.....	81
CHRONIC LIVER DISEASES	82
MARKET SIZE.....	82
<i>TABLE 51 GLOBAL SALES OF DRUGS TO TREAT CHRONIC LIVER DISEASES, THROUGH 2014 (\$ MILLIONS)</i>	83
<i>FIGURE 25 GLOBAL SALES OF DRUGS TO TREAT CHRONIC LIVER DISEASES, 2007-2014 (\$ MILLIONS)</i>	83
MARKET OVERVIEW.....	83
NON-ALCOHOLIC FATTY LIVER DISEASE.....	84
MARKET SIZE.....	84

<i>TABLE 52 GLOBAL SALES OF DRUGS TO TREAT NON-ALCOHOLIC FATTY LIVER DISEASES, THROUGH 2014 (\$ MILLIONS)</i>	85
<i>FIGURE 26 GLOBAL SALES OF DRUGS TO TREAT NON-ALCOHOLIC FATTY LIVER DISEASES, 2007-2094 (\$ MILLIONS)</i>	85
MARKET OVERVIEW	85
Market Overview (Continued)	86
CHAPTER 10: DRUG-INDUCED LIVER DISEASE.....	87
DRUG-INDUCED	87
DRUGS THAT CAN CAUSE LIVER DISEASE.....	88
ACETAMINOPHEN (TYLENOL)	88
STATINS	89
NICOTINIC ACID (NIACIN).....	89
AMIODARONE (CORDARONE).....	89
NONSTEROIDAL ANTI-INFLAMMATORY DRUGS	89
METHOTREXATE (RHEUMATREX, TREXALL)	90
ANTIBIOTICS.....	90
TACRINE (COGNEX)	91
DISULFIRAM.....	91
VITAMIN SUPPLEMENTS.....	91
<i>TABLE 53 DRUGS THAT CAN CAUSE LIVER DISEASE</i>	91
<i>TABLE 53 (CONTINUED)</i>	92
CHAPTER 11: NEW DEVELOPMENTS.....	93
CLINICAL TRIALS	93
<i>TABLE 54 NUMBER OF CLINICAL TRIALS FOR HEPATITIS/ LIVER-INDUCED LIVER DISEASES</i>	93
<i>TABLE 55 NUMBER OF CLINICAL TRIALS FOR LIVER TUMORS</i>	94
<i>TABLE 56 NUMBER OF CLINICAL TRIALS FOR CONGENITAL LIVER DEFECTS</i>	94
<i>TABLE 57 NUMBER OF CLINICAL TRIALS FOR AUTOIMMUNE LIVER DISORDERS</i>	94
<i>TABLE 58 NUMBER OF CLINICAL TRIALS FOR ALCOHOL-INDUCED LIVER DISEASES</i>	95
<i>TABLE 59 NUMBER OF CLINICAL TRIALS FOR CHRONIC LIVER DISEASES</i>	95
<i>TABLE 60 NUMBER OF CLINICAL TRIALS FOR NON-ALCOHOLIC FATTY LIVER DISEASE</i>	95
NEW DEVELOPMENTS.....	96
NEW DEVELOPMENTS (CONTINUED)	97
STEM CELL RESEARCH	98
CHAPTER 12: MARKET BY DRUG TYPE.....	99
MARKET SIZE.....	99

<i>TABLE 61 GLOBAL SALES OF DRUGS USED TO TREAT LIVER DISEASES, THROUGH 2014 (\$ MILLIONS)</i>	99
<i>TABLE 61 (CONTINUED)</i>	100
<i>FIGURE 27 GLOBAL SALES OF DRUGS USED TO TREAT LIVER DISEASES, 2007-2014 (\$ MILLIONS)</i>	101
MARKET SHARE	102
<i>TABLE 62 SHARE OF DRUGS TO TREAT LIVER DISEASES, 2008</i>	102
<i>FIGURE 28 SHARE OF DRUGS TO TREAT LIVER DISEASES, 2008 (%)</i>	103
VACCINES.....	103
MARKET SIZE.....	104
<i>TABLE 63 GLOBAL SALES OF HEPATITIS VACCINE, THROUGH 2014 (\$ MILLIONS)</i>	104
<i>FIGURE 29 GLOBAL SALES OF HEPATITIS VACCINE, 2007-2014 (\$ MILLIONS)</i>	104
ANTIVIRALS	105
MARKET SIZE.....	105
<i>TABLE 64 GLOBAL SALES OF NUCLEOSIDE ANALOGS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	105
<i>FIGURE 30 GLOBAL SALES OF NUCLEOSIDE ANALOGS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	106
<i>TABLE 65 GLOBAL SALES OF NUCLEOTIDE ANALOGS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	106
<i>FIGURE 31 GLOBAL SALES OF NUCLEOTIDE ANALOGS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	107
INTERFERONS.....	107
MARKET SIZE.....	107
<i>TABLE 66 GLOBAL SALES OF INTERFERONS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	108
<i>FIGURE 32 GLOBAL SALES OF INTERFERONS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	108
IMMUNE GLOBULINS	108
MARKET SIZE.....	109
<i>TABLE 67 GLOBAL SALES OF IMMUNE GLOBULINS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	109
<i>FIGURE 33 GLOBAL SALES OF IMMUNE GLOBULINS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	109
CHEMOTHERAPY	110
MARKET SIZE.....	110
<i>TABLE 68 GLOBAL SALES OF CHEMOTHERAPY DRUGS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	110
<i>FIGURE 34 GLOBAL SALES OF CHEMOTHERAPY DRUGS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	111
TARGETED THERAPY.....	111
MARKET SIZE.....	111

<i>TABLE 69 GLOBAL SALES OF TARGETED THERAPY TO TREAT LIVER CANCER, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	112
<i>FIGURE 35 GLOBAL SALES OF TARGETED THERAPY TO TREAT LIVER CANCER, BY REGION, 2007-2014 (\$ MILLIONS)</i>	112
CHELATING AGENTS	112
MARKET SIZE.....	113
<i>TABLE 70 GLOBAL SALES OF CHELATING AGENTS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	113
<i>FIGURE 36 GLOBAL SALES OF CHELATING AGENTS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	113
CORTICOSTEROIDS	114
MARKET SIZE.....	114
<i>TABLE 71 GLOBAL SALES OF CORTICOSTEROIDS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	114
<i>FIGURE 37 GLOBAL SALES OF CORTICOSTEROIDS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	115
IMMUNOSUPPRESSIVE AGENTS.....	115
MARKET SIZE.....	115
<i>TABLE 72 GLOBAL SALES OF IMMUNOSUPPRESSIVE AGENTS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	116
<i>FIGURE 38 GLOBAL SALES OF IMMUNOSUPPRESSIVE AGENTS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	116
ANTIMETABOLITES.....	116
MARKET SIZE.....	117
<i>TABLE 73 GLOBAL SALES OF ANTIMETABOLITES TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	117
<i>FIGURE 39 GLOBAL SALES OF ANTIMETABOLITES TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	117
ANABOLIC STEROIDS	118
MARKET SIZE.....	118
<i>TABLE 74 GLOBAL SALES OF ANABOLIC STEROIDS TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	118
<i>FIGURE 40 GLOBAL SALES OF ANABOLIC STEROIDS TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	119
ALCOHOL ABUSE DRUGS.....	119
MARKET SIZE.....	119
<i>TABLE 75 GLOBAL SALES OF ALCOHOL ABUSE DRUGS, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	120
<i>FIGURE 41 GLOBAL SALES OF ALCOHOL ABUSE DRUGS, BY REGION, 2007-2014 (\$ MILLIONS)</i>	120
ANTI-REJECTION MEDICATION	120
MARKET SIZE.....	121

<i>TABLE 76 GLOBAL SALES OF ANTI-REJECTION MEDICATION TO TREAT LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	121
<i>FIGURE 42 GLOBAL SALES OF ANTI-REJECTION MEDICATION TO TREAT LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	121
INFECTION-FIGHTING DRUGS	122
MARKET SIZE.....	122
<i>TABLE 77 GLOBAL SALES OF INFECTION-FIGHTING DRUGS TO TREAT LIVER TRANSPLANT PATIENTS, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	122
<i>FIGURE 43 GLOBAL SALES OF INFECTION-FIGHTING DRUGS TO TREAT LIVER TRANSPLANT PATIENTS, BY REGION, 2007-2014 (\$ MILLIONS)</i>	123
ANTIFUNGAL PROPHYLAXIS	123
MARKET SIZE.....	123
<i>TABLE 78 GLOBAL SALES OF ANTIFUNGAL PROPHYLAXIS IN LIVER TRANSPLANTS, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	124
<i>FIGURE 44 GLOBAL SALES OF ANTIFUNGAL PROPHYLAXIS IN LIVER TRANSPLANTS, BY REGION, 2007-2014 (\$ MILLIONS)</i>	124
GALLSTONE SOLUBILIZING AGENTS	124
MARKET SIZE.....	125
<i>TABLE 79 GLOBAL SALES OF GALLSTONE SOLUBILIZING AGENTS, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	125
<i>FIGURE 45 GLOBAL SALES OF GALLSTONE SOLUBILIZING AGENTS, BY REGION, 2007-2014 (\$ MILLIONS)</i>	125
OTHER DRUGS USED TO TREAT NON-ALCOHOLIC FATTY LIVER DISEASES	126
MARKET SIZE.....	126
<i>TABLE 80 GLOBAL SALES OF OTHER DRUGS USED TO TREAT NON-ALCOHOLIC FATTY LIVER DISEASES, BY REGION, THROUGH 2014 (\$ MILLIONS)</i>	126
<i>FIGURE 46 GLOBAL SALES OF OTHER DRUGS USED IN THE TREATMENT OF NON-ALCOHOLIC FATTY LIVER DISEASES, BY REGION, 2007-2014 (\$ MILLIONS)</i>	127
CHAPTER 13: PATENT ANALYSIS	128
PATENTS BY YEAR.....	128
<i>TABLE 81 TOTAL NUMBER OF PATENTS EACH YEAR, 2005–2009</i>	129
<i>FIGURE 47 TOTAL NUMBER OF PATENTS EACH YEAR, 2005–2009</i>	129
PATENTS BY TYPE	129
<i>TABLE 82 NUMBER OF PATENTS BY TYPE, 2005–2009</i>	130
<i>FIGURE 48 NUMBER OF PATENTS BY TYPE, 2005–2009</i>	130
<i>FIGURE 49 PATENTS, SHARE BY TYPE, 2005–2009 (%)</i>	131
PATENTS BY COUNTRY	131

<i>TABLE 83 TOTAL NUMBER OF PATENTS BY COUNTRY, 2005–2009.....</i>	<i>132</i>
<i>FIGURE 50 TOTAL NUMBER OF PATENTS BY COUNTRY, 2005–2009</i>	<i>132</i>
PATENTS BY COMPANY.....	133
<i>TABLE 84 NUMBER OF PATENTS BY COMPANY, 2005–2009.....</i>	<i>133</i>
<i>FIGURE 51 TOTAL NUMBER OF PATENTS BY COMPANY, 2005–2009.....</i>	<i>134</i>
PATENTS BY ASSIGNEE	134
<i>TABLE 85 NUMBER OF PATENTS BY ASIGNEE, 2005–2009.....</i>	<i>135</i>
<i>FIGURE 52 NUMBER OF PATENTS BY ASSIGNEE, 2005–2009.....</i>	<i>135</i>

CHAPTER 14: COMPANY PROFILES	136
ABBOTT LABORATORIES.....	136
ACTAVIS U.S.....	136
ALKERMES, INC	137
ALNYLAM PHARMACEUTICALS	137
BARR PHARMACEUTICALS.....	138
BAYER SCHERING PHARMA AG.....	138
BIOTEST PHARMACEUTICALS CORPORATION	138
BRISTOL-MYERS SQUIBB	139
CANGENE CORPORATION.....	140
DEBIOPHARM GROUP	140
ELI LILLY & COMPANY.....	141
GALMED MEDICAL RESEARCH, LTD.....	142
GILEAD SCIENCES, INC.....	142
GLAXOSMITHKLINE PLC	143
HUMAN GENOME SCIENCES	143
IDENIX PHARMACEUTICALS INC.....	144
KINEMED, INC.....	144
MALLINCKRODT	145
MEDA PHARMACEUTICALS.....	145
MERCK & CO.	146
NOVARTIS AG	146
PAR PHARMACEUTICAL COMPANIES, INC.	147
ROCHE.....	147
ROXANE LABORATORIES, INC.....	148
SANOFI AVENTIS	148
SAVIENT PHARMACEUTICALS, INC.....	148
SCHERING-PLOUGH.....	149
SCYNEXIS	150
TEVA PHARMACEUTICAL INDUSTRIES LTD.	150
THREE RIVERS PHARMACEUTICALS	151
VALEANT PHARMACEUTICALS INTERNATIONAL	152
WATSON PHARMACEUTICALS, INC.....	153
WYETH INC.	153
ZYDUS PHARMACEUTICALS INC.....	154
ZYMOGENETICS	154

APPENDIX	155
ABBREVIATIONS	155