

ANTIFUNGAL DRUGS: TECHNOLOGIES AND GLOBAL MARKETS



PHM029F
March 2017

Paul Taylor
Project Analyst

ISBN: 1-62296-450-0



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
info@bccresearch.com

TABLE OF CONTENTS

TOPIC	PAGE NO.
CHAPTER 1 INTRODUCTION	2
INTRODUCTION TO THE REPORT	2
REASONS FOR DOING THIS STUDY	2
SCOPE	3
METHODOLOGY	4
PRIMARY DATA AND INFORMATION GATHERING	4
SECONDARY DATA AND INFORMATION GATHERING	5
MARKET SHARE ANALYSIS AND MARKET FORECAST PREDICTION	5
ANALYST'S CREDENTIALS	5
RELATED BCC RESEARCH REPORTS	6
BCC RESEARCH WEBSITE	6
DISCLAIMER	6
CHAPTER 2 EXECUTIVE SUMMARY	8
MARKET SEGMENTATION	10
GLOBAL MARKET REVENUE ANALYSIS BY MARKET SEGMENT	10
<i>SUMMARY TABLE GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	10
<i>SUMMARY FIGURE A GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2015-2021 (\$ MILLIONS)</i>	10
<i>SUMMARY FIGURE B GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)</i>	12
CHAPTER 3 INTRODUCTION TO THE GLOBAL ANTIFUNGAL DRUG MARKET	14
SCOPE OF APPLICATIONS: HUMAN HEALTHCARE	14
PRIMARY FUNGAL INFECTIONS	15
<i>TABLE 1 RISK FACTORS ASSOCIATED WITH HUMAN FUNGAL INFECTIONS</i>	16
OPPORTUNISTIC FUNGAL INFECTIONS	17
HUMAN FUNGAL INFECTIONS	17
SELECTION OF STATISTICAL DATA ON FUNGAL INFECTIONS	18
<i>FIGURE 1 GLOBAL BURDEN OF HIV-RELATED CRYPTOCOCCAL MENINGITIS (ESTIMATED YEARLY CASES)</i>	19
FUNGAL INFECTION OF THE NAILS	20
<i>TABLE 2 STATISTICS OF THE 10 MOST SIGNIFICANT INVASIVE FUNGAL INFECTIONS</i>	21
RISK FACTORS FOR DEVELOPING FUNGAL INFECTIONS	23
<i>TABLE 3 RISK FACTORS ASSOCIATED WITH HUMAN FUNGAL INFECTIONS</i>	24
FUNGAL SPECIES THAT CAUSE INFECTION IN HUMANS	25
CANDIDIASIS	25
Some Basic Facts about Candida Infections	25
Cutaneous Candidiasis	28
Chronic Mucocutaneous Candidiasis	28
GI Tract Candidiasis	28
Respiratory Tract Candidiasis	29
Genitourinary Tract Candidiasis	29
Hepatosplenic Candidiasis	29
Systemic Candidiasis	29

TOPIC	PAGE NO.
CANDIDEMIA	29
Disseminated Candidiasis	30
ASPERGILLOSIS	31
BLASTOMYCOSIS	32
COCCIDIOIDOMYCOSIS	33
CRYPTOCOCCOSIS	34
DERMATOPHYTOSIS	35
HISTOPLASMOSIS	36
ONYCHOMYCOSIS	37
PARACOCCIDIOIDOMYCOSIS	38
PSEUDALLESCHERIASIS	39
SPOROTRICHOSIS	39
ZYGOMYCOSIS	40
<i>TABLE 4 EPIDEMIOLOGY OF COMMON FUNGAL DISEASES</i>	41
RARE FUNGAL INFECTIONS AND DISORDERS	42
<i>TABLE 5 MORPHOLOGIC FEATURES OF FUNGI AND PSEUDOFUNGI INFECTIONS OF UNUSUAL OR UNCERTAIN ETIOLOGY</i>	44
LITERATURE REVIEW	45
CHAPTER 4 COMMON ENVIRONMENTAL FUNGI	48
MOLDS AND THE HUMAN ISSUES ASSOCIATED WITH THEM	48
WHY ENVIRONMENTAL MOLD IS A UNIQUE PROBLEM	49
HEALTH RISKS DUE TO ENVIRONMENT FUNGI AND MOLD	49
<i>TABLE 6 COMMON HEALTH SYMPTOMS BASED ON ENVIRONMENTAL FUNGI AND MOLDS</i>	51
<i>TABLE 7 RISK FACTORS ASSOCIATED WITH ENVIRONMENTAL FUNGI AND MOLDS</i>	51
<i>TABLE 8 COMMON SOURCE LOCATIONS FOR ENVIRONMENTAL MOLDS</i>	52
ENVIRONMENTAL MOLDS	52
ALTERNARIA	52
Literature Review	52
ASPERGILLUS	53
Literature Review	53
CLADOSPORIUM	54
Literature Review	54
PENICILLIUM	55
Literature Review	55
EUROTIUM	56
Literature Review	56
RHIZOPUS	56
Literature Review	56
MUCOR	57
Literature Review	57
GEOTRICHUM	58
Literature Review	58
FUSARIUM	58
Literature Review	59
STACHYBOTRYS	59
Literature Review	59

TOPIC	PAGE NO.
WALLEMIA	59
Literature Review	60
TRICHOTHECIUM	60
Literature Review	60
SCOPULARIOPSIS BREVICAULIS	60
Literature Review	60
SCYTALIDIUM DIMIDIATUM	61
Literature Review	61
TRICHODERMA	62
Literature Review	62
PAECILOMYCES VARIOTII	62
Literature Review	63
CHAPTER 5 ANTIFUNGAL AGENTS	65
ANTIFUNGAL AGENTS	65
<i>TABLE 9 GLOBAL MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	65
GLOBAL MARKET REVENUE ANALYSIS BY INDIVIDUAL REGION	65
<i>TABLE 10 GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	66
<i>FIGURE 2 GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY REGION, 2015 - 2021 (\$ MILLIONS)</i>	66
MARKET SHARE ANALYSIS	67
<i>TABLE 11 GLOBAL MARKET SHARE ANALYSIS FOR ANTIFUNGAL DRUGS BY COMPANY, 2015 (\$ MILLIONS/%)</i>	68
CLASSIFICATION OF ANTI FUNGAL AGENTS	69
CLASSIFICATION OF ANTIFUNGAL DRUGS	69
TIMELINE OF ANTIFUNGAL DRUG DEVELOPMENT	70
<i>FIGURE 3 TIMELINE OF ANTIFUNGAL DRUG DEVELOPMENT</i>	70
SYSTEMIC ANTIFUNGAL DRUGS	71
POLYENES ANTIBIOTICS	71
<i>TABLE 12 PATENTS FOR AMPHOTERICIN B AND ESTIMATED EXPIRY DATES</i>	71
AZOLES	72
THE TRIAZOLE ANTIFUNGAL DRUGS	73
Fluconazole	73
<i>TABLE 13 APPROVED FLUCONAZOLE PRESCRIPTION PRODUCTS</i>	73
Itraconazole	74
<i>TABLE 14 PATENTS FOR ITRACONAZOLE AND ESTIMATED EXPIRY DATES</i>	75
Voriconazole	75
<i>TABLE 15 PATENTS FOR VORICONAZOLE AND ESTIMATED EXPIRY DATES</i>	76
<i>TABLE 16 APPROVED VORICONAZOLE PRESCRIPTION PRODUCTS</i>	76
Posaconazole	76
<i>TABLE 17 PATENTS FOR POSACONAZOLE AND ESTIMATED EXPIRY DATES</i>	78
THE IMIDAZOLES ANTIFUNGAL DRUGS	78
Ketoconazole	78
<i>TABLE 18 PATENTS FOR KETOCONAZOLE AND ESTIMATED EXPIRY DATES</i>	79
Miconazole	79
<i>TABLE 19 APPROVED MICONAZOLE OTC PRODUCTS</i>	80

TOPIC	PAGE NO.
Clotrimazole	80
<i>TABLE 20 INTERNATIONAL BRAND NAMES FOR CLOTRIMAZOLE</i>	81
<i>TABLE 21 APPROVED GENERIC PRESCRIPTION VERIONS OF CLOTRIMAZOLE</i>	81
ECHINOCANDINS	82
CASPOFUNGIN	82
<i>TABLE 22 PATENTS FOR CASPOFUNGIN AND ESTIMATED EXPIRY DATES</i>	82
Micafungin	83
<i>TABLE 23 PATENTS FOR MICA FUNGIN AND ESTIMATED EXPIRY DATES</i>	83
Anidulafungin	83
<i>TABLE 24 PATENTS FOR ANIDULAFUNGIN AND ESTIMATED EXPIRY DATES</i>	84
ANTIMETABOLITE: FLUCYTOSINE (5-FC)	84
OTHER SYSTEMIC ANTIFUNGAL AGENTS	85
CHITIN SYNTHESIS INHIBITORS	85
MANNOPROTEIN SYNTHESIS INHIBITORS	85
SPHINGOLIPID SYNTHESIS INHIBITORS	86
TOPICAL ANTIFUNGAL DRUGS	86
TOPICAL POLYENE ANTIBIOTICS	86
Nystatin	86
Hamycin	86
Natamycin (pimaricin)	86
Filipin	87
AZOLES-IMIDAZOLE	87
Econazole	87
Butoconazole	87
Oxiconazole	87
Sulconazole	88
Fenticonazole	88
Isoconazole	88
Bifonazole (Mycospor)	88
Tioconazole	88
Terconazole	88
OTHERS	89
CHAPTER 6 SUMMARY: GLOBAL MARKET FOR ANTIFUNGAL DRUGS	92
INTRODUCTION	92
MARKET REVENUE ANALYSIS	92
GLOBAL MARKET REVENUE ANALYSIS	92
<i>TABLE 25 GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	92
<i>TABLE 26 GLOBAL MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	93
<i>FIGURE 4 GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012 - 2021 (\$ MILLIONS)</i>	93
GLOBAL MARKET REVENUE ANALYSIS BY INDIVIDUAL REGION	94
<i>FIGURE 5 GLOBAL MARKET SHARE FOR ANTIFUNGAL DRUGS, BY REGION, 2015 (%)</i>	94
NORTH AMERICA: MARKET REVENUE ANALYSIS	95
<i>TABLE 27 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	95

TOPIC	PAGE NO.
<i>TABLE 28 NORTH AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	96
<i>FIGURE 6 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)</i>	96
EUROPE: MARKET REVENUE ANALYSIS	97
<i>TABLE 29 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	97
<i>TABLE 30 EUROPE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	98
<i>FIGURE 7 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, 2012 - 2021 (\$ MILLIONS)</i>	98
ASIA-PACIFIC: MARKET REVENUE ANALYSIS	99
<i>TABLE 31 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	99
<i>TABLE 32 ASIA-PACIFIC MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	100
<i>FIGURE 8 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, 2012 - 2021 (\$ MILLIONS)</i>	100
LATIN AMERICA: MARKET REVENUE ANALYSIS	101
<i>TABLE 33 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	101
<i>TABLE 34 LATIN AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	102
<i>FIGURE 9 LATIN AMERICA FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012 - 2021 (\$ MILLIONS)</i>	102
MIDDLE EAST/AFRICA: MARKET REVENUE ANALYSIS	103
<i>TABLE 35 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	103
<i>TABLE 36 MIDDLE EAST/AFRICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	104
<i>FIGURE 10 MIDDLE EAST/AFRICA FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)</i>	104
CHAPTER 7 NORTH AMERICAN MARKET FOR ANTIFUNGAL DRUGS	107
REGULATORY AND LEGISLATIVE REQUIREMENTS	107
UNITED STATES	107
Investigational New Drug (IND) Application	107
New Drug Application (NDA)	107
Abbreviated New Drug Application (ANDA)	108
OVER-THE-COUNTER (OTC) ANTIFUNGAL DRUG PRODUCTS	108
New Drug Application (NDA) Process	108
OTC Drug Monograph System	108
CANADA	109
MARKET DYNAMICS	111
MARKET DRIVERS	111
Emerging Pipeline of New and Innovative Antifungal Drugs	111
Spread of Fungal Disease Caused by Widespread Use of Broad Spectrum Antibiotics	112
Increasing Number of People with Weakened Immune Systems	112
The Food and Drug Administration Safety and Innovation Act (FDASIA)	113

TOPIC	PAGE NO.
MARKET RESTRAINTS	113
Increasing Resistance of Fungi to Antifungal Drugs	113
Increased Popularity of Traditional Medicines and Alternative Treatments to Control Fungus	114
Allergic Reaction to some Types of Antifungal Drugs such as Azoles which Cause Anaphylaxis	115
Impact of the Patient Protection and the Affordable Care Act of 2010 on the U.S. Antifungal Drug Market	115
Growth and Development of the Generic Antifungal Drugs Market	115
Lack of Funding and Development of New and Innovative Antifungal Drug Classes	115
MARKET REVENUE ANALYSIS	116
NORTH AMERICA: MARKET REVENUE ANALYSIS	116
<i>TABLE 37 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	117
<i>FIGURE 11 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2015-2021 (\$ MILLIONS)</i>	117
NORTH AMERICA: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	118
<i>TABLE 38 NORTH AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	118
<i>FIGURE 12 NORTH AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY INDIVIDUAL SEGMENT, 2015 (\$ MILLIONS)</i>	118
NORTH AMERICA: MARKET REVENUE ANALYSIS BY INDIVIDUAL COUNTRY	119
<i>FIGURE 13 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY INDIVIDUAL COUNTRY, 2015 (\$ MILLIONS)</i>	119
UNITED STATES: MARKET REVENUE ANALYSIS	120
<i>TABLE 39 UNITED STATES MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	121
<i>TABLE 40 UNITED STATES MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	121
CANADA: MARKET REVENUE ANALYSIS	122
<i>TABLE 41 CANADA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	122
<i>TABLE 42 CANADA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	122
MARKET SHARE ANALYSIS	123
NORTH AMERICA: MARKET SHARE ANALYSIS	123
<i>TABLE 43 NORTH AMERICA MARKET SHARE ANALYSIS FOR ANTIFUNGAL DRUGS BY COMPANY, 2015 (\$ MILLIONS/%)</i>	124
CHAPTER 8 EUROPEAN MARKET FOR ANTIFUNGAL DRUGS	126
REGULATORY AND LEGISLATIVE REQUIREMENTS: EUROPE	126
OVER-THE-COUNTER (OTC) ANTIFUNGAL DRUG PRODUCTS	127
THE RUSSIAN FEDERATION	127
MARKET DYNAMICS	129
MARKET DRIVERS	129
Changing Epidemiology of Invasive Fungal Diseases in Europe	129
Growing Aging Population in Europe	130
Increased Immunocompromised Population in Europe	130

TOPIC	PAGE NO.
Europe has Increasing Prevalence of Fungal Resistance	130
MARKET RESTRAINTS	131
Austerity Measures have been Introduced Throughout Europe	131
Growth and Development of the Generic Antifungal Drugs Market	131
Increased Competitive Product Pricing and Mandatory Tendering Regarded as a Major Market Restraint	131
Major Challenges to the Development of New Antifungal Drugs	132
MARKET REVENUE ANALYSIS	132
EUROPE: MARKET REVENUE ANALYSIS	132
<i>TABLE 44 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	133
<i>FIGURE 14 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, 212-2021 (\$ MILLIONS)</i>	133
EUROPE: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	134
<i>TABLE 45 EUROPE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	134
<i>FIGURE 15 EUROPE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, 2015 (\$ MILLIONS)</i>	134
EUROPE: MARKET REVENUE ANALYSIS BY INDIVIDUAL COUNTRY	135
<i>FIGURE 16 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY INDIVIDUAL COUNTRY, 2015 (\$ MILLIONS)</i>	136
FRANCE: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	136
<i>TABLE 46 FRANCE MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	137
<i>TABLE 47 FRANCE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	138
GERMANY: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	138
<i>TABLE 48 GERMANY MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	138
<i>TABLE 49 GERMANY MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	139
ITALY: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	139
<i>TABLE 50 ITALY MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	139
<i>TABLE 51 ITALY MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	140
SPAIN: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	140
<i>TABLE 52 SPAIN MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	140
<i>TABLE 53 SPAIN MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	141
UNITED KINGDOM: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	141
<i>TABLE 54 UNITED KINGDOM MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	141
<i>TABLE 55 UNITED KINGDOM MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	142

TOPIC	PAGE NO.
REST OF EUROPE: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	142
<i>TABLE 56 REST OF EUROPE MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	142
<i>TABLE 57 REST OF EUROPE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	143
MARKET SHARE ANALYSIS	143
EUROPE: MARKET SHARE ANALYSIS	143
<i>TABLE 58 EUROPE MARKET SHARE ANALYSIS FOR ANTIFUNGAL DRUGS, 2015</i>	144
CHAPTER 9 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS	146
JAPAN	146
REGULATORY AND LEGISLATIVE REQUIREMENTS	146
MARKETING AUTHORIZATION SYSTEM	146
Pharmaceutical Reimbursement Approval Process in Japan	147
<i>FIGURE 17 JAPAN DRUG FUNDING/REIMBURSEMENT APPROVAL PROCESS</i>	147
CHINA	149
OVERVIEW OF THE HEALTHCARE SYSTEM	149
<i>FIGURE 18 THE CHINESE HEALTHCARE SYSTEM</i>	150
Healthcare Reforms	150
The New Rural Co-operative Medical Care System (NRCMCS)	150
The Urban Residents Healthcare Insurance Scheme	151
Healthcare Institutions	151
<i>TABLE 59 NUMBER OF HEALTHCARE INSTITUTIONS ACCORDING TO OWNERSHIP IN CHINA, 2010</i>	152
HOSPITAL RESOURCES	152
<i>TABLE 60 TOTAL NUMBER OF HOSPITALS BY RANKING CHINA, 2010</i>	153
Pharmaceutical Regulatory and Legislative Developments: China	153
INDIA	157
OVERVIEW OF THE HEALTHCARE SYSTEM	157
National Level	157
State Level	158
Regional Level	158
District Level	158
Sub-Divisional/Taluka Level	158
Community Level	158
Primary Health Center (PHC) level	159
Sub Health Center (SHC) level	159
<i>TABLE 61 OVERVIEW OF HEALTHCARE IN INDIA</i>	159
Hospital Resources	160
Population Statistics	161
Pharmaceutical Regulatory and Legislative Developments: India	162
SOUTH KOREA	163
REGULATORY AND LEGISLATIVE REQUIREMENTS	163
Pharmaceutical Regulatory and Legislative Developments: South Korea	164
Pharmaceutical Reimbursement: South Korea	164
MARKET DYNAMICS	165

TOPIC	PAGE NO.
MARKET DRIVERS	165
Increasing Resistance of Fungi to Antifungal Drugs	165
Increased Popularity of Traditional Medicines and Alternative Treatments to Control Fungus	165
Growth and Development of Generic Drugs Market in Japan	166
Westernized Lifestyle Increases Incidence of IFIs in the Asia-Pacific Region	166
Growth in the Indian Market	166
MARKET RESTRAINTS	168
China	168
India	169
Japan	170
Banning of Oral Formulations of Ketoconazole	170
MARKET REVENUE ANALYSIS	171
ASIA-PACIFIC: MARKET REVENUE ANALYSIS	171
<i>TABLE 62 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	171
<i>FIGURE 19 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)</i>	172
ASIA-PACIFIC: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	172
<i>TABLE 63 ASIA-PACIFIC MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	173
<i>FIGURE 20 ASIA-PACIFIC MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY INDIVIDUAL SEGMENT, 2015 (\$ MILLIONS)</i>	173
ASIA-PACIFIC: MARKET REVENUE ANALYSIS BY INDIVIDUAL COUNTRY	174
<i>FIGURE 21 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS, BY INDIVIDUAL COUNTRY, 2015 (\$ MILLIONS)</i>	174
CHINA: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	175
<i>TABLE 64 CHINA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	175
<i>TABLE 65 CHINA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	175
INDIA: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	176
<i>TABLE 66 INDIA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	177
<i>TABLE 67 INDIA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	177
JAPAN: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	177
<i>TABLE 68 JAPAN MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	178
<i>TABLE 69 JAPAN MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	178
SOUTH KOREA: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR ANTIFUNGAL DRUGS	179
<i>TABLE 70 SOUTH KOREA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	179

TOPIC	PAGE NO.
<i>TABLE 71 SOUTH KOREA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	179
TAIWAN: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	180
<i>TABLE 72 TAIWAN MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	180
<i>TABLE 73 TAIWAN MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	180
OTHER ASIA-PACIFIC: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	181
<i>TABLE 74 OTHER ASIA-PACIFIC MARKETS FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	181
<i>TABLE 75 OTHER ASIA-PACIFIC MARKETS FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	181
MARKET SHARE ANALYSIS	182
ASIA-PACIFIC: MARKET SHARE ANALYSIS	182
<i>TABLE 76 ASIA-PACIFIC MARKET SHARE ANALYSIS FOR ANTIFUNGAL DRUGS BY COMPANY, 2015 (\$ MILLIONS/%)</i>	184
CHAPTER 10 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS	186
BRAZIL	186
BACKGROUND	186
REGULATORY AND LEGISLATIVE REQUIREMENTS	187
MARKET ENTRY AND REIMBURSEMENT OF PHARMACEUTICALS: BRAZIL	188
ARGENTINA	189
BACKGROUND	189
Government-funded Public Health Sector	189
Social Health Insurance Sector	190
Private Sector	191
Regulatory and Legislative Requirements	191
<i>FIGURE 22 ARGENTINA: REGULATORY DRUG APPROVAL PROCESS</i>	192
MEXICO	193
LEGISLATION AND REGULATIONS GOVERNING MEDICAL DEVICES IN MEXICO	194
Health Insurance Structure Mexico	194
MARKET DYNAMICS	195
MARKET DRIVERS	195
Growth and Development of the Pharmaceutical Market in Central and Latin America	195
Government Support to Boost Brazil Healthcare Sector	196
Increased Burden of Fungal Infections in Central and Latin America	197
Introduction of Tax Funded Universal Health Coverage throughout Latin America	197
MARKET RESTRAINTS	198
Challenges Associated with Local Business Practices and Cultural Conditions in Brazil	198
Issues Associated with Lack of Public Funding, a Weak Healthcare Infrastructure, and a Lack of Affordability in Latin America	198
Pricing Issues	199
MARKET REVENUE ANALYSIS	199

TOPIC	PAGE NO.
LATIN AMERICA: MARKET REVENUE ANALYSIS	199
<i>TABLE 77 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	200
<i>FIGURE 23 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)</i>	200
LATIN AMERICA: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	201
<i>TABLE 78 LATIN AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	201
<i>FIGURE 24 LATIN AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY INDIVIDUAL SEGMENT, 2015 (\$ MILLIONS)</i>	201
LATIN AMERICA: MARKET REVENUE ANALYSIS BY INDIVIDUAL COUNTRY	202
<i>FIGURE 25 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS BY INDIVIDUAL COUNTRY, 2015 (\$ MILLIONS)</i>	203
ARGENTINA: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	203
<i>TABLE 79 ARGENTINA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	204
<i>TABLE 80 ARGENTINA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	205
BRAZIL: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	205
<i>TABLE 81 BRAZIL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	206
<i>TABLE 82 BRAZIL MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	206
CHILE: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	207
<i>TABLE 83 CHILE MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	207
<i>TABLE 84 CHILE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	207
MEXICO: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	208
<i>TABLE 85 MEXICO MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	209
<i>TABLE 86 MEXICO MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	209
REST OF LATIN AMERICA (ROLA): MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	210
<i>TABLE 87 REST OF LATIN AMERICA (ROLA) MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	210
<i>TABLE 88 REST OF LATIN AMERICA (ROLA) MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	210
MARKET SHARE ANALYSIS	211
LATIN AMERICA: MARKET SHARE ANALYSIS	211
<i>TABLE 89 LATIN AMERICA: MARKET SHARE ANALYSIS ANTIFUNGAL DRUGS BY COMPANY, 2015</i>	212
CHAPTER 11 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS	214
INTRODUCTION	214
SOUTH AFRICA	214

TOPIC	PAGE NO.
REGIONAL REGULATIONS, LEGISLATION AND REIMBURSEMENT: MIDDLE EAST/AFRICA	214
MEDICAL DEVICE REGULATORY REQUIREMENTS: SOUTH AFRICA	214
HEALTH INSURANCE STRUCTURE: SOUTH AFRICA	215
REIMBURSEMENT OF PHARMACEUTICALS: SOUTH AFRICA	216
SAUDI ARABIA	216
THE PUBLIC HEALTHCARE SYSTEM	217
PRIMARY HEALTHCARE SERVICES	217
SECONDARY AND TERTIARY HEALTHCARE SERVICES	218
<i>FIGURE 26 CURRENT STRUCTURE OF THE HEALTHCARE SECTORS IN SAUDI ARABIA 2012</i>	218
<i>FIGURE 27 NUMBER OF HOSPITALS IN SAUDI, BY TYPE, 2012</i>	218
THE PRIVATE HEALTHCARE SECTOR	219
PHARMACEUTICAL REGULATORY REQUIREMENTS	219
HEALTH INSURANCE STRUCTURE	220
MARKET DYNAMICS	221
MARKET DRIVERS	221
Growth of Fungal Infections in Countries Affected by AIDS	221
The Global HIV/AIDS Epidemic	221
Fungal Toxins are Poisoning Africa: The Invisible Epidemic	222
Substantial Financial Support for Healthcare in Saudi Arabia	222
South Africa's Political Stability and Improved Economic Outlook Helps Support Growth in the Healthcare Market	222
MARKET RESTRAINTS	223
Limited Infrastructure Capacity	223
Inherent Political and Economic Issues Constrain the Provision of Healthcare in Africa	223
Poor Distribution Structure and Networks in Africa	223
MARKET REVENUE ANALYSIS	223
MIDDLE/EAST/AFRICA: MARKET REVENUE ANALYSIS	223
<i>TABLE 90 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	224
<i>FIGURE 28 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)</i>	224
MIDDLE EAST/AFRICA: MARKET REVENUE ANALYSIS BY INDIVIDUAL MARKET SEGMENTS FOR PRESCRIPTION ANTIFUNGAL DRUGS	225
<i>TABLE 91 MIDDLE EAST/AFRICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	226
<i>FIGURE 29 MIDDLE EAST/AFRICA: MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS BY INDIVIDUAL SEGMENT, 2015 (\$ MILLIONS)</i>	226
MIDDLE EAST/AFRICA: MARKET REVENUE ANALYSIS BY INDIVIDUAL REGION	227
<i>FIGURE 30 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY INDIVIDUAL REGION, 2015 (\$ MILLIONS)</i>	227
MIDDLE EAST: MARKET REVENUE ANALYSIS	227
<i>TABLE 92 MIDDLE EAST MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	228
<i>TABLE 93 MIDDLE EAST MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	229
AFRICA: MARKET REVENUE ANALYSIS	229

TOPIC	PAGE NO.
<i>TABLE 94 AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	229
<i>TABLE 95 AFRICA: MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)</i>	230
MARKET SHARE ANALYSIS	230
MIDDLE EAST/AFRICA: MARKET SHARE ANALYSIS	230
<i>TABLE 96 MIDDLE EAST/AFRICA MARKET SHARE FOR ANTIFUNGAL DRUGS, BY COMPANY, 2015 (\$ MILLIONS/%)</i>	231
CHAPTER 12 COMPANY PROFILES	234
MANUFACTURERS OF PRESCRIPTION PHARMACEUTICALS	234
ANACOR PHARMACEUTICALS, INC.	234
ASTELLAS PHARMA INC.	235
BAYER HEALTHCARE	236
DR. REDDY'S LABORATORIES LTD.	237
ENZON PHARMACEUTICALS, INC.	238
FERRER INTERNACIONAL S.A.	239
GALDERMA PHARMA S.A. GALDERMA S.A.	239
GILEAD SCIENCES, INC.	240
GLENMARK PHARMACEUTICALS LIMITED	241
JANSSEN PHARMACEUTICALS INC. (JOHNSON AND JOHNSON)	242
MERCK	242
<i>TABLE 97 ANNUAL REVENUES OF MAJOR ANTIFUNGAL DRUG (MERCK) (\$ MILLIONS)</i>	244
MERZ PHARMA GMBH & CO. KGAA	244
MYLAN PHARMACEUTICALS INC. (MP LABORATORIES (MAURITIUS) LTD.)	245
NOVARTIS HOLDING AG	246
PFIZER INC.	246
<i>TABLE 98 ANNUAL REVENUES OF MAJOR ANTIFUNGAL DRUG (PFIZER) (\$ MILLIONS)</i>	248
SANOFI	248
SIGMA-TAU PHARMACEUTICALS, INC.	249
TARO PHARMACEUTICAL INDUSTRIES LTD.	249
TEVA PHARMACEUTICALS INDUSTRIES LTD.	250
VALEANT PHARMACEUTICALS INTERNATIONAL, INC.	251
<i>FIGURE 31 PROGRESSION OF SALES OF JUBLIA (\$ MILLIONS)</i>	252
OTC ANTIFUNGAL MANUFACTURERS	253
PHARMACEUTICAL OTC MARKET	253
ALVA-AMCO PHARMACAL COS. INC.	253
<i>TABLE 99 MAJOR HUMAN OTC ANTIFUNGAL MANUFACTURERS AND PRODUCTS</i>	254
BLAINE LABS	254
DARTMOUTH PHARMACEUTICALS	255
KRAMER CONSUMER HEALTHCARE	255
MCNEIL CONSUMER HEALTHCARE	255
MOBERG PHARMA AB	256
PEDINOL, (A DIVISION OF VALEANT PHARMACEUTICALS)	256
PERRIGO COMPANY PLC	256
STIEFEL LABORATORIES, INC.	257
TARMAC PRODUCTS INC. (AXARA PHARMACEUTICAL)	257
ALTERNATIVE OTC MANUFACTURERS	258

TOPIC	PAGE NO.
<i>TABLE 100 COMMONLY AVAILABLE ALTERNATIVE ANTIFUNGAL PRODUCTS</i>	258
MAJOR ALTERNATIVE OTC MANUFACTURER PROFILES	258
CRYSTAL STAR HERBAL NUTRITION	258
ENZYMEDICA	259
FOREST HERBS RESEARCH LTD.	259
GARDEN OF LIFE	260
KING BIO	260
LIFE EXTENSION NUTRITION CENTER	260
MICHAEL'S NATUROPATHIC PROGRAMS	261
NATURE'S PLUS	261
NOW FOODS	261
NUTRITION NOW	262
PROSYMBIOTICS	262
PURE ESSENCE LABORATORIES	262
RAINBOW LIGHT	263
RENEW LIFE	263
SOLARAY	263
VITANICA	264
CHAPTER 13 APPENDIXES	266
<i>TABLE 101 COMPANY ADDRESSES AND CONTACT DETAILS</i>	266
CHAPTER 14 GOVERNMENT REGULATORY AGENCIES AND PROFESSIONAL ASSOCIATIONS	276
GOVERNMENT REGULATIONS	276
FOOD AND DRUG ADMINISTRATION (FDA)	276
<i>TABLE 102 SELECTED ANTIFUNGAL WARNING LETTERS FOR THE HUMAN SEGMENT FROM THE FDA TO MANUFACTURERS, 2005-2016</i>	277
ENVIRONMENTAL PROTECTION AGENCY (EPA)	281
UNITED STATES DEPARTMENT OF AGRICULTURE (USDA)	283
FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS	283
PROFESSIONAL ASSOCIATIONS	283
MEDICAL AND VETERINARY ASSOCIATIONS	283
AGRICULTURAL ASSOCIATIONS	283
OTHER ENVIRONMENTAL ASSOCIATIONS	284
CHAPTER 15 COMMONLY USED ACRONYMS USED IN THIS REPORT	286

LIST OF TABLES

TABLE HEADING	PAGE NO.
SUMMARY TABLE GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	10
TABLE 1 RISK FACTORS ASSOCIATED WITH HUMAN FUNGAL INFECTIONS	16
TABLE 2 STATISTICS OF THE 10 MOST SIGNIFICANT INVASIVE FUNGAL INFECTIONS	21
TABLE 3 RISK FACTORS ASSOCIATED WITH HUMAN FUNGAL INFECTIONS	24
TABLE 4 EPIDEMIOLOGY OF COMMON FUNGAL DISEASES	41
TABLE 5 MORPHOLOGIC FEATURES OF FUNGI AND PSEUDOFUNGI INFECTIONS OF UNUSUAL OR UNCERTAIN ETIOLOGY	44
TABLE 6 COMMON HEALTH SYMPTOMS BASED ON ENVIRONMENTAL FUNGI AND MOLDS	51
TABLE 7 RISK FACTORS ASSOCIATED WITH ENVIRONMENTAL FUNGI AND MOLDS	51
TABLE 8 COMMON SOURCE LOCATIONS FOR ENVIRONMENTAL MOLDS	52
TABLE 9 GLOBAL MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	65
TABLE 10 GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY REGION, THROUGH 2021 (\$ MILLIONS)	66
TABLE 11 GLOBAL MARKET SHARE ANALYSIS FOR ANTIFUNGAL DRUGS BY COMPANY, 2015 (\$ MILLIONS/%)	68
TABLE 12 PATENTS FOR AMPHOTERICIN B AND ESTIMATED EXPIRY DATES	71
TABLE 13 APPROVED FLUCONAZOLE PRESCRIPTION PRODUCTS	73
TABLE 14 PATENTS FOR ITRACONAZOLE AND ESTIMATED EXPIRY DATES	75
TABLE 15 PATENTS FOR VORICONAZOLE AND ESTIMATED EXPIRY DATES	76
TABLE 16 APPROVED VORICONAZOLE PRESCRIPTION PRODUCTS	76
TABLE 17 PATENTS FOR POSACONAZOLE AND ESTIMATED EXPIRY DATES	78
TABLE 18 PATENTS FOR KETOCONAZOLE AND ESTIMATED EXPIRY DATES	79
TABLE 19 APPROVED MICONAZOLE OTC PRODUCTS	80
TABLE 20 INTERNATIONAL BRAND NAMES FOR CLOTRIMAZOLE	81
TABLE 21 APPROVED GENERIC PRESCRIPTION VERIONS OF CLOTRIMAZOLE	81
TABLE 22 PATENTS FOR CASPOFUNGIN AND ESTIMATED EXPIRY DATES	82
TABLE 23 PATENTS FOR MICA FUNGIN AND ESTIMATED EXPIRY DATES	83
TABLE 24 PATENTS FOR ANIDULAFUNGIN AND ESTIMATED EXPIRY DATES	84
TABLE 25 GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	92
TABLE 26 GLOBAL MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	93
TABLE 27 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	95
TABLE 28 NORTH AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	96
TABLE 29 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	97
TABLE 30 EUROPE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	98
TABLE 31 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	99
TABLE 32 ASIA-PACIFIC MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	100
TABLE 33 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	101

TABLE HEADING	PAGE NO.
TABLE 34 LATIN AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	102
TABLE 35 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	103
TABLE 36 MIDDLE EAST/AFRICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	104
TABLE 37 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	117
TABLE 38 NORTH AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	118
TABLE 39 UNITED STATES MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	121
TABLE 40 UNITED STATES MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	121
TABLE 41 CANADA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	122
TABLE 42 CANADA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	122
TABLE 43 NORTH AMERICA MARKET SHARE ANALYSIS FOR ANTIFUNGAL DRUGS BY COMPANY, 2015 (\$ MILLIONS/%)	124
TABLE 44 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	133
TABLE 45 EUROPE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	134
TABLE 46 FRANCE MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	137
TABLE 47 FRANCE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	138
TABLE 48 GERMANY MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	138
TABLE 49 GERMANY MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	139
TABLE 50 ITALY MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	139
TABLE 51 ITALY MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	140
TABLE 52 SPAIN MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	140
TABLE 53 SPAIN MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	141
TABLE 54 UNITED KINGDOM MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	141
TABLE 55 UNITED KINGDOM MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	142
TABLE 56 REST OF EUROPE MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	142
TABLE 57 REST OF EUROPE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	143
TABLE 58 EUROPE MARKET SHARE ANALYSIS FOR ANTIFUNGAL DRUGS, 2015	144
TABLE 59 NUMBER OF HEALTHCARE INSTITUTIONS ACCORDING TO OWNERSHIP IN CHINA, 2010	152
TABLE 60 TOTAL NUMBER OF HOSPITALS BY RANKING CHINA, 2010	153

TABLE HEADING	PAGE NO.
TABLE 61 OVERVIEW OF HEALTHCARE IN INDIA	159
TABLE 62 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	171
TABLE 63 ASIA-PACIFIC MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	173
TABLE 64 CHINA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	175
TABLE 65 CHINA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	175
TABLE 66 INDIA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	177
TABLE 67 INDIA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	177
TABLE 68 JAPAN MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	178
TABLE 69 JAPAN MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	178
TABLE 70 SOUTH KOREA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	179
TABLE 71 SOUTH KOREA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	179
TABLE 72 TAIWAN MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	180
TABLE 73 TAIWAN MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	180
TABLE 74 OTHER ASIA-PACIFIC MARKETS FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	181
TABLE 75 OTHER ASIA-PACIFIC MARKETS FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	181
TABLE 76 ASIA-PACIFIC MARKET SHARE ANALYSIS FOR ANTIFUNGAL DRUGS BY COMPANY, 2015 (\$ MILLIONS/%)	184
TABLE 77 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	200
TABLE 78 LATIN AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	201
TABLE 79 ARGENTINA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	204
TABLE 80 ARGENTINA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	205
TABLE 81 BRAZIL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	206
TABLE 82 BRAZIL MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	206
TABLE 83 CHILE MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	207
TABLE 84 CHILE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	207
TABLE 85 MEXICO MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	209
TABLE 86 MEXICO MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	209

TABLE HEADING	PAGE NO.
TABLE 87 REST OF LATIN AMERICA (ROLA) MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	210
TABLE 88 REST OF LATIN AMERICA (ROLA) MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	210
TABLE 89 LATIN AMERICA: MARKET SHARE ANALYSIS ANTIFUNGAL DRUGS BY COMPANY, 2015	212
TABLE 90 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	224
TABLE 91 MIDDLE EAST/AFRICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	226
TABLE 92 MIDDLE EAST MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	228
TABLE 93 MIDDLE EAST MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	229
TABLE 94 AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	229
TABLE 95 AFRICA: MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, THROUGH 2021 (\$ MILLIONS)	230
TABLE 96 MIDDLE EAST/AFRICA MARKET SHARE FOR ANTIFUNGAL DRUGS, BY COMPANY, 2015 (\$ MILLIONS/%)	231
TABLE 97 ANNUAL REVENUES OF MAJOR ANTIFUNGAL DRUG (MERCK) (\$ MILLIONS)	244
TABLE 98 ANNUAL REVENUES OF MAJOR ANTIFUNGAL DRUG (PFIZER) (\$ MILLIONS)	248
TABLE 99 MAJOR HUMAN OTC ANTIFUNGAL MANUFACTURERS AND PRODUCTS	254
TABLE 100 COMMONLY AVAILABLE ALTERNATIVE ANTIFUNGAL PRODUCTS	258
TABLE 101 COMPANY ADDRESSES AND CONTACT DETAILS	266
TABLE 102 SELECTED ANTIFUNGAL WARNING LETTERS FOR THE HUMAN SEGMENT FROM THE FDA TO MANUFACTURERS, 2005-2016	277

LIST OF FIGURES

FIGURE TITLE	PAGE NO.
SUMMARY FIGURE A GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2015-2021 (\$ MILLIONS)	10
SUMMARY FIGURE B GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)	12
FIGURE 1 GLOBAL BURDEN OF HIV-RELATED CRYPTOCOCCAL MENINGITIS (ESTIMATED YEARLY CASES)	19
FIGURE 2 GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY REGION, 2015 - 2021 (\$ MILLIONS)	66
FIGURE 3 TIMELINE OF ANTIFUNGAL DRUG DEVELOPMENT	70
FIGURE 4 GLOBAL MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012 - 2021 (\$ MILLIONS)	93
FIGURE 5 GLOBAL MARKET SHARE FOR ANTIFUNGAL DRUGS, BY REGION, 2015 (%)	94
FIGURE 6 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)	96
FIGURE 7 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, 2012 - 2021 (\$ MILLIONS)	98
FIGURE 8 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, 2012 - 2021 (\$ MILLIONS)	100
FIGURE 9 LATIN AMERICA FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012 - 2021 (\$ MILLIONS)	102
FIGURE 10 MIDDLE EAST/AFRICA FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)	104
FIGURE 11 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2015-2021 (\$ MILLIONS)	117
FIGURE 12 NORTH AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY INDIVIDUAL SEGMENT, 2015 (\$ MILLIONS)	118
FIGURE 13 NORTH AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY INDIVIDUAL COUNTRY, 2015 (\$ MILLIONS)	119
FIGURE 14 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY SEGMENT, 212-2021 (\$ MILLIONS)	133
FIGURE 15 EUROPE MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY SEGMENT, 2015 (\$ MILLIONS)	134
FIGURE 16 EUROPE MARKET FOR ANTIFUNGAL DRUGS BY INDIVIDUAL COUNTRY, 2015 (\$ MILLIONS)	136
FIGURE 17 JAPAN DRUG FUNDING/REIMBURSEMENT APPROVAL PROCESS	147
FIGURE 18 THE CHINESE HEALTHCARE SYSTEM	150
FIGURE 19 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)	172
FIGURE 20 ASIA-PACIFIC MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY INDIVIDUAL SEGMENT, 2015 (\$ MILLIONS)	173
FIGURE 21 ASIA-PACIFIC MARKET FOR ANTIFUNGAL DRUGS, BY INDIVIDUAL COUNTRY, 2015 (\$ MILLIONS)	174
FIGURE 22 ARGENTINA: REGULATORY DRUG APPROVAL PROCESS	192
FIGURE 23 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)	200
FIGURE 24 LATIN AMERICA MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS, BY INDIVIDUAL SEGMENT, 2015 (\$ MILLIONS)	201
FIGURE 25 LATIN AMERICA MARKET FOR ANTIFUNGAL DRUGS BY INDIVIDUAL COUNTRY, 2015 (\$ MILLIONS)	203
FIGURE 26 CURRENT STRUCTURE OF THE HEALTHCARE SECTORS IN SAUDI ARABIA 2012	218

FIGURE TITLE	PAGE NO.
FIGURE 27 NUMBER OF HOSPITALS IN SAUDI, BY TYPE, 2012	218
FIGURE 28 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY SEGMENT, 2012-2021 (\$ MILLIONS)	224
FIGURE 29 MIDDLE EAST/AFRICA: MARKET FOR PRESCRIPTION ANTIFUNGAL DRUGS BY INDIVIDUAL SEGMENT, 2015 (\$ MILLIONS)	226
FIGURE 30 MIDDLE EAST/AFRICA MARKET FOR ANTIFUNGAL DRUGS, BY INDIVIDUAL REGION, 2015 (\$ MILLIONS)	227
FIGURE 31 PROGRESSION OF SALES OF JUBLIA (\$ MILLIONS)	252