

# GASTROINTESTINAL THERAPEUTICS AND DIAGNOSTICS: TECHNOLOGIES AND GLOBAL MARKETS



PHM046C  
September 2016

Yogita Zutshi  
*Project Analyst*

ISBN: 1-62296-366-0



**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](http://www.bccresearch.com)  
[information@bccresearch.com](mailto:information@bccresearch.com)

**TABLE OF CONTENTS**

<b>TOPIC</b>	<b>PAGE NO.</b>
CHAPTER 1 INTRODUCTION	2
STUDY GOALS AND OBJECTIVES	2
REASONS FOR DOING THE STUDY	2
INTENDED AUDIENCE	2
SCOPE OF REPORT	2
METHODOLOGY AND INFORMATION SOURCES	3
ANALYST'S CREDENTIALS	4
RELATED BCC RESEARCH REPORTS	4
BCC RESEARCH WEBSITE	4
DISCLAIMER	5
CHAPTER 2 EXECUTIVE SUMMARY	7
GASTROINTESTINAL THERAPEUTICS AND DIAGNOSTICS	7
ANTIDIARRHEALS	7
ANTIEMETICS	7
GASTRIC CANCER	8
GASTROESOPHAGEAL REFLUX DISEASE TREATMENTS	8
LAXATIVES	8
INFLAMMATORY BOWEL DISEASES	9
OTHER GI DRUGS	9
<i>SUMMARY TABLE GLOBAL MARKET FOR GASTROINTESTINAL DISORDER THERAPEUTICS AND DIAGNOSTICS, BY CATEGORY, THROUGH 2021 (\$ MILLIONS)</i>	10
<i>SUMMARY FIGURE GLOBAL MARKET FOR GASTROINTESTINAL DISORDER THERAPEUTICS AND DIAGNOSTICS, BY CATEGORY, 2015-2021 (\$ MILLIONS)</i>	10
CHAPTER 3 OVERVIEW	12
<i>TABLE 1 U.S. INCIDENCE OF INDIVIDUAL PATHOGENS</i>	12
<i>TABLE 2 ESTIMATED INCIDENCE/PREVALENCE/MORTALITY OF SELECTED GI CONDITIONS IN THE U.S.</i>	13
GASTRIC CANCER	13
<i>TABLE 3 GASTRIC CANCER PREVALENCE, 2012-2021 (THOUSANDS)</i>	14
INFLAMMATORY BOWEL DISEASE (IBD)	15
<i>TABLE 4 PREVALENCE ESTIMATES OF IBD, BY COUNTRY (%)</i>	15
<i>TABLE 5 U.S. PREVALENCE OF INFLAMMATORY BOWEL DISEASE (NUMBER OF CASES PER 100,000 POPULATION)</i>	16
<i>TABLE 6 U.S. INCIDENCE OF INFLAMMATORY BOWEL DISEASE (NUMBER OF NEWLY DIAGNOSED CASES PER 100,000 PERSON-YEARS)</i>	16
<i>TABLE 7 GLOBAL PREVALENCE OF INFLAMMATORY BOWEL DISEASE</i>	16
CONSTIPATION	16
OPIOID-INDUCED CONSTIPATION	17
<i>TABLE 8 COMMONLY USED LAXATIVE AGENTS</i>	17
GASTROESOPHAGEAL REFLUX DISEASE	18
<i>TABLE 9 PREVALENCE OF GERD SYMPTOMS (%)</i>	18
CHAPTER 4 ETIOLOGY	20
ANATOMY AND PHYSIOLOGY OF THE GASTROINTESTINAL SYSTEM	20

<b>TOPIC</b>	<b>PAGE NO.</b>
STRUCTURE OF GI SYSTEM	20
INTERACTIONS WITH OTHER SYSTEMS	20
Nervous System	20
THE ENTERIC NERVOUS SYSTEM: AN OVERVIEW	21
FACTORS AFFECTING THE FUNCTIONING OF THE GI SYSTEM	21
PHYSIOLOGY OF THE GI SYSTEM AND THE ROLE OF EACH PART IN THE GI PROCESS	22
INGESTION AND DEGLUTITION	22
Mouth	22
Pharynx	23
Esophagus	23
DIGESTION	23
Mouth	24
Stomach	24
Small Intestines	25
ABSORPTION	26
ELIMINATION	26
Large Intestine	26
ORGANS OF THE GASTROINTESTINAL SYSTEM	27
Liver	27
Biliary Tract	28
Pancreas	28
DISORDERS AND ANOMALIES OF THE GI TRACT	29
Dysphagia	29
Esophageal Pain	30
Abdominal Pain	30
Constipation	31
Diarrhea	31
DISORDERS OF THE GASTROINTESTINAL TRACT WALLS	32
Gastritis	32
Gastroenteritis	33
Peptic Ulcers	33
Gastric Ulcers	35
Duodenal Ulcers	36
INFLAMMATORY BOWEL DISEASE	37
Ulcerative Colitis	37
Crohn's Disease	37
Enterocolitis	38
DIVERTICULAR DISEASE	38
ANOMALIES GASTROINTESTINAL TRACT MOTILITY	39
Irritable Bowel Syndrome	39
Intestinal Obstructions	39
DISORDERS RELATED TO GASTROINTESTINAL MALABSORPTION	40
Celiac Sprue	40
Tropical Sprue	41
CANCERS OF THE GASTROINTESTINAL SYSTEM	41
Esophageal Cancer	41
Gastric Cancer	41

<b>TOPIC</b>	<b>PAGE NO.</b>
Liver Cancer	42
Pancreatic Cancer	43
Small Intestinal Cancer	44
Colonic Polyps and Colon Cancer	44
LATEST TREATMENT AND PROGNOSIS METHODS FOR CANCER OF THE GI SYSTEM	45
PILL-SIZED VIDEO CAMERA: PILLCAM ESO	46
SmartPill	46
Monoclonal Antibodies	46
INSURANCE COVERAGE FOR TREATMENT	47
<i>TABLE 10 U.S. STATES THAT PROVIDE COMPLETE RANGE OF COLORECTAL DIAGNOSTIC SCREENING</i>	47
LATEST RESEARCH TRENDS AND STUDIES IN GASTROINTESTINAL FIELD	49
Radio Frequency Identification Technology	49
Generic Influence and Penetration	49
BRANDED VS. OTC PROTON PUMP INHIBITORS	50
MAIL ORDER TRENDS	50
MOBILE APPLICATION	51
CHAPTER 5 PRESCRIPTION THERAPY MARKET	53
<i>TABLE 11 GLOBAL MARKET FOR PRESCRIPTION GI THERAPIES, BY CATEGORY, THROUGH 2021 (\$ MILLIONS)</i>	53
ANTIDIARRHEALS	53
SYSTEMICALLY ACTING ANTIDIARRHEALS	54
OPIUM DERIVATIVES	54
<i>TABLE 12 KEY ANTI-DIARRHEAL BRANDS</i>	55
MARKET SIZE AND GROWTH	56
<i>TABLE 13 GLOBAL MARKET FOR PRESCRIPTION ANTIDIARRHEAL THERAPIES, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	56
<i>FIGURE 1 GLOBAL MARKET FOR PRESCRIPTION ANTIDIARRHEAL THERAPIES, BY REGION, 2015-2021 (\$ MILLIONS)</i>	56
ANTIEMETICS	57
<i>TABLE 14 ANTIEMETICS: SITE OF ACTION AND EXAMPLES</i>	57
LOCALLY ACTING ANTIEMETICS	58
CENTRALLY ACTING ANTIEMETICS	58
Antidopaminergics	59
Phenothiazines	59
Metochlopramide	60
ANTICHOLINERGICS	60
SEROTONIN RECEPTOR ANTAGONISTS	60
Neurokinin-1 Receptor Antagonists	62
MISCELLANEOUS ANTIEMETICS	62
<i>TABLE 15 MARKETED ANTIEMETIC PRODUCTS</i>	63
MARKET SIZE AND GROWTH	63
<i>TABLE 16 GLOBAL MARKET FOR PRESCRIPTION ANTIEMETIC THERAPIES, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	64
<i>FIGURE 2 GLOBAL MARKET FOR PRESCRIPTION ANTIEMETIC THERAPIES, BY REGION, 2015-2021 (\$ MILLIONS)</i>	64
GASTROINTESTINAL CANCER TREATMENTS	64

<b>TOPIC</b>	<b>PAGE NO.</b>
BIOLOGICS	65
TABLE 17 MARKETED GASTROINTESTINAL CANCER PRODUCTS	66
MARKET SIZE AND GROWTH	67
TABLE 18 GLOBAL PRESCRIPTION GASTROINTESTINAL CANCER THERAPIES, BY REGION, THROUGH 2021 (\$ MILLIONS)	67
FIGURE 3 GLOBAL PRESCRIPTION GASTROINTESTINAL CANCER THERAPIES, BY REGION, 2015-2021 (\$ MILLIONS)	67
GASTROESOPHAGEAL REFLUX DISEASE TREATMENTS	68
H2 INHIBITORS	68
TABLE 19 MARKETED H2 INHIBITOR PRODUCTS	71
MARKET SIZE AND GROWTH	71
TABLE 20 GLOBAL PRESCRIPTION H2 INHIBITOR MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	72
FIGURE 4 GLOBAL PRESCRIPTION H2 INHIBITOR MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	72
PROTON PUMP INHIBITORS	72
TABLE 21 PROTON PUMP INHIBITORS: THERAPY AND PH	74
TABLE 22 MARKETED PROTON PUMP INHIBITOR PRODUCTS	75
MARKET SIZE AND GROWTH	75
TABLE 23 GLOBAL PRESCRIPTION PROTON PUMP INHIBITOR MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	76
FIGURE 5 GLOBAL PRESCRIPTION PROTON PUMP INHIBITOR MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	76
LAXATIVES	76
TABLE 24 PHARMACOLOGIC MANAGEMENT OF CHRONIC CONSTIPATION IN THE U.S.	78
TABLE 25 MARKETED LAXATIVE PRODUCTS	78
TABLE 26 PHARMACOLOGIC MANAGEMENT OF CHRONIC CONSTIPATION (IN AND OUTSIDE THE U.S.)	79
MARKET SIZE AND GROWTH	79
TABLE 27 GLOBAL PRESCRIPTION LAXATIVE MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	80
FIGURE 6 GLOBAL PRESCRIPTION LAXATIVE MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	80
BOWEL ANTI-INFLAMMATORY	80
TABLE 28 MARKETED ANTI-INFLAMMATORY BOWEL PRODUCTS	83
MARKET SIZE AND GROWTH	83
TABLE 29 GLOBAL MARKET FOR PRESCRIPTION BOWEL ANTI-INFLAMMATORIES, BY REGION, THROUGH 2021 (\$ MILLIONS)	83
FIGURE 7 GLOBAL MARKET FOR PRESCRIPTION BOWEL ANTI-INFLAMMATORIES, BY REGION, 2015-2021 (\$ MILLIONS)	83
OTHER GI DRUGS	84
MARKET SIZE AND GROWTH	85
TABLE 30 GLOBAL MARKET FOR OTHER PRESCRIPTION GASTROINTESTINAL THERAPIES, BY REGION, THROUGH 2021 (\$ MILLIONS)	85
FIGURE 8 GLOBAL MARKET FOR OTHER PRESCRIPTION GASTROINTESTINAL THERAPIES, BY REGION, 2015-2021 (\$ MILLIONS)	85
CHAPTER 6 OTC THERAPY MARKET	88
ANTACIDS	88
SYSTEMIC ANTACIDS	89

<b>TOPIC</b>	<b>PAGE NO.</b>
Sodium Bicarbonate	89
NONSYSTEMIC ANTACIDS	89
Calcium Carbonate	89
Aluminum Products	89
Magnesium Products	90
Combination Products	90
<i>TABLE 31 KEY BRANDS OF ANTACIDS IN U.S. AND OTHER MARKETS</i>	91
MARKET SIZE AND GROWTH	92
<i>TABLE 32 GLOBAL OTC ANTACID MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	92
<i>FIGURE 9 GLOBAL OTC ANTACID MARKET, BY REGION, 2015-2021 (\$ MILLIONS)</i>	92
LOCALLY ACTING ANTIDIARRHEALS	93
INTESTINAL FLORA MODIFIERS	94
<i>TABLE 33 MARKETED OTC ANTIDIARRHEAL PRODUCTS</i>	95
MARKET SIZE AND GROWTH	95
<i>TABLE 34 GLOBAL OTC ANTIDIARRHEAL MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	95
<i>FIGURE 10 GLOBAL OTC ANTIDIARRHEAL MARKET, BY REGION, 2015-2021 (\$ MILLIONS)</i>	96
H2 INHIBITORS	96
<i>TABLE 35 MARKETED OTC H2 INHIBITOR PRODUCTS</i>	99
MARKET SIZE AND GROWTH	99
<i>TABLE 36 GLOBAL MARKET FOR OTC H2 INHIBITORS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	99
<i>FIGURE 11 GLOBAL MARKET FOR OTC H2 INHIBITORS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	99
PROTON PUMP INHIBITORS	100
OMEPRazole (PRILOSEC, PROCTER & GAMBLE)	100
<i>TABLE 37 MARKETED OTC PROTON PUMP INHIBITOR PRODUCTS</i>	101
MARKET SIZE AND GROWTH	101
<i>TABLE 38 GLOBAL MARKET FOR OTC PROTON PUMP INHIBITORS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	101
<i>FIGURE 12 GLOBAL MARKET FOR OTC PROTON PUMP INHIBITORS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	102
LAXATIVES	102
<i>TABLE 39 MARKETED OTC LAXATIVE PRODUCTS</i>	103
MARKET SIZE AND GROWTH	103
<i>TABLE 40 GLOBAL OTC LAXATIVE MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	104
<i>FIGURE 13 GLOBAL OTC LAXATIVE MARKET, BY REGION, 2015-2021 (\$ MILLIONS)</i>	104
TOTAL OTC GASTROINTESTINAL DRUG MARKET SIZE AND GROWTH	104
<i>TABLE 41 GLOBAL MARKET FOR OTC GASTROINTESTINAL DRUGS, BY PRODUCT CATEGORY, THROUGH 2021 (\$ MILLIONS)</i>	105
<i>FIGURE 14 GLOBAL MARKET FOR OTC GASTROINTESTINAL DRUGS, BY PRODUCT CATEGORY, 2015-2021 (\$ MILLIONS)</i>	105
CHAPTER 7 DIAGNOSTICS AND DEVICES MARKET	107
ENTERIC DISEASE TESTING METHODS	107
<i>TABLE 42 ENTERIC DISEASE TESTING METHODS</i>	107

<b>TOPIC</b>	<b>PAGE NO.</b>
<i>TABLE 43 ENTERIC DISEASE DIAGNOSTICS, BY DISEASE TYPE</i>	108
GLOBAL MARKET FOR ENTERIC DIAGNOSTIC TESTS	108
<i>TABLE 44 GLOBAL MARKET FOR DIAGNOSTICS FOR GI DISEASES, BY TYPE, THROUGH 2021 (\$ MILLIONS)</i>	108
<i>FIGURE 15 GLOBAL MARKET FOR DIAGNOSTICS FOR GI DISEASES, BY TYPE, 2015-2021 (\$ MILLIONS)</i>	109
CAMPYLOBACTER	109
FILMARRAY GASTROINTESTINAL (GI) PANEL	109
<i>TABLE 45 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR CAMPYLOBACTER AND SALMONELLA</i>	109
MARKET SIZE AND GROWTH	110
<i>TABLE 46 GLOBAL MARKET FOR CAMPYLOBACTER DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	110
<i>FIGURE 16 GLOBAL MARKET FOR CAMPYLOBACTER DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	110
NOROVIRUS	111
LABORATORY TESTS	111
IMMUNOLOGICAL TESTS	111
ELISA	111
RT-QPCR ASSAYS	111
CONVENTIONAL RT-PCR ASSAYS FOR GENOTYPING	111
ENZYME IMMUNOASSAYS	112
MULTIPLEX TESTING	112
<i>TABLE 47 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR NOROVIRUSES</i>	112
Multiplex PCRs	112
Luminex Multiplex PCR	113
FOODPROOF NOROVIRUS DETECTION KIT (GI, GII, GIV)	113
Next-Generation Sequencing (NGS)	113
MARKET SIZE AND GROWTH	114
<i>TABLE 48 GLOBAL MARKET FOR NOROVIRUS DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	114
<i>FIGURE 17 GLOBAL MARKET FOR NOROVIRUS DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	114
ROTAVIRUS	115
LUMINEX GASTROINTESTINAL PATHOGEN PANEL	115
<i>TABLE 49 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR ROTAVIRUS</i>	116
MARKET SIZE AND GROWTH	116
<i>TABLE 50 GLOBAL MARKET FOR ROTAVIRUS DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	116
<i>FIGURE 18 GLOBAL MARKET FOR ROTAVIRUS DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	116
GIARDIA PARASITE	117
REVERSE TRANSCRIPTASE PCR	117
HIGH-RESOLUTION MELT CURVE ANALYSIS	117
PCR-RESTRICTION FRAGMENT LENGTH POLYMORPHISM	117
SINGLE-STRAND CONFORMATION POLYMORPHISM	118
PCR-REVERSE LINE BLOT ASSAY	118
<i>TABLE 51 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR GIARDIA PARASITE</i>	118
MARKET SIZE AND GROWTH	118

<b>TOPIC</b>	<b>PAGE NO.</b>
<i>TABLE 52 GLOBAL MARKET FOR GIARDIA PARASITE DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	119
<i>FIGURE 19 GLOBAL MARKET FOR GIARDIA PARASITE DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	119
E. COLI	119
<i>TABLE 53 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR E. COLI</i>	120
MARKET SIZE AND GROWTH	120
<i>TABLE 54 GLOBAL MARKET FOR E. COLI DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	121
<i>FIGURE 20 GLOBAL MARKET FOR E. COLI DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	121
CRYPTOSPORIDIUM	121
ACID-STAINING TEST	122
<i>TABLE 55 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR CRYPTOSPORIDIUM</i>	122
MARKET SIZE AND GROWTH	122
<i>TABLE 56 GLOBAL MARKET FOR CRYPTOSPORIDIUM DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	122
<i>FIGURE 21 GLOBAL MARKET FOR CRYPTOSPORIDIUM DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	123
SHIGELLA	123
<i>TABLE 57 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR SHIGELLA</i>	123
MARKET SIZE AND GROWTH	124
<i>TABLE 58 GLOBAL MARKET FOR SHIGELLA DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	124
<i>FIGURE 22 GLOBAL MARKET FOR SHIGELLA DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	125
TYPHOID	125
<i>TABLE 59 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR SALMONELLA</i>	126
MARKET SIZE AND GROWTH	126
<i>TABLE 60 GLOBAL MARKET FOR TYPHOID DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	126
<i>FIGURE 23 GLOBAL MARKET FOR TYPHOID DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	126
AMEBIASIS	127
<i>TABLE 61 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR AMEBIASIS</i>	128
MARKET SIZE AND GROWTH	128
<i>TABLE 62 GLOBAL MARKET FOR AMEBIASIS DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	128
<i>FIGURE 24 GLOBAL MARKET FOR AMEBIASIS DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	128
CHOLERA	129
<i>TABLE 63 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR CHOLERA</i>	129
MARKET SIZE AND GROWTH	130
<i>TABLE 64 GLOBAL MARKET FOR CHOLERA DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	130
<i>FIGURE 25 GLOBAL MARKET FOR CHOLERA DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	130
OTHER (H. PYLORI, YERSINIA) DIAGNOSTIC TESTS	131
<i>TABLE 65 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR H. PYLORI</i>	131
MARKET SIZE AND GROWTH	131



<b>TOPIC</b>	<b>PAGE NO.</b>
<i>TABLE 66 GLOBAL MARKET FOR OTHER (SALMONELLA, H. PYLORI) DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	132
<i>FIGURE 26 GLOBAL MARKET FOR OTHER (SALMONELLA, H. PYLORI) DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)</i>	132
MEDICAL DEVICES (ENDOSCOPY)	132
<i>TABLE 67 EMERGING NOVEL DIAGNOSTIC AND THERAPEUTIC ENDOSCOPIC TECHNIQUES</i>	133
NEW DIAGNOSTIC ENDOSCOPIC TECHNIQUES	133
Endoscopic Ultrasound	134
Radio-controlled, Motor-driven Capsule (Robotic Endoscopy)	134
NEW TECHNOLOGY IN THERAPY OF GI CANCERS	134
Natural Orifice Transluminal Endoscopic Surgery (NOTES) Technique	134
Per-oral Endoscopic Myotomy	134
Endoscopic Mucosal Resection	135
Radiofrequency Ablation	135
MARKET SIZE AND GROWTH	135
<i>TABLE 68 GLOBAL MARKET FOR MEDICAL DEVICES (ENDOSCOPY), BY REGION, THROUGH 2021 (\$ MILLIONS)</i>	135
<i>FIGURE 27 GLOBAL MARKET FOR MEDICAL DEVICES (ENDOSCOPY), BY REGION, 2015-2021 (\$ MILLIONS)</i>	135
MARKET SIZE AND GROWTH	136
<i>TABLE 69 GLOBAL MARKET FOR GASTRO-DIAGNOSTICS, THROUGH 2021 (\$ MILLIONS)</i>	136
<i>FIGURE 28 GLOBAL MARKET FOR GASTRO-DIAGNOSTICS, 2015-2021 (\$ MILLIONS)</i>	137
CHAPTER 8 GASTROINTESTINAL PRODUCT PIPELINE	139
THERAPIES FOR TREATING GASTRIC CANCER	139
RAMUCIRUMAB (LY3009806)	139
RG1273 (RO4368451)	139
TAS-118	139
KEYTRUDA (PEMBROLIZUMAB)	139
AVELUMAB (PF 06834635)	139
PERTUZUMAB	140
<i>TABLE 70 DEVELOPMENTAL PIPELINE OF GI THERAPIES</i>	140
GERD AND PEPTIC ULCERS	141
VONOPRAZAN (TAK-438)	141
THERAPIES FOR TREATING IBS	141
LINACLOTIDE	141
IBODUTANT	141
PLECANATIDE	142
TENAPANOR	142
ALOSETRON	142
THERAPIES FOR TREATING ULCERATIVE COLITIS AND CROHN'S DISEASE	142
ETROLIZUMAB	142
OZANIMOD	142
XELJANZ (TOFACITINIB)	143
TAK-114	143
LY3074828	143
GED 0301 (MONGERSEN)	143

<b>TOPIC</b>	<b>PAGE NO.</b>
CHAPTER 9 PATENTS	145
<i>TABLE 71 PATENTS ISSUED</i>	145
<i>TABLE 72 PATENTS APPLIED</i>	161
CHAPTER 10 COMPANY PROFILES	175
ALLERGAN PLC	175
ARDELYX INC.	175
ASTELLAS PHARMA INC.	175
ASTRAZENECA	176
CELGENE CORP.	176
CLOVIS ONCOLOGY	176
DAEWOONG PHARMACEUTICAL CO., LTD.	177
ELI LILLY AND COMPANY	177
GLAXOSMITHKLINE	177
HORIZON PHARMA PLC	178
IMMUNOGENX	178
IMMUNOMEDICS	178
MERCK & CO.	179
MERRIMACK PHARMACEUTICALS INC.	179
NEW LINK GENETICS	179
OTSUKA HOLDINGS CO. LTD.	179
PFIZER INC.	180
ROCHE	180
SANOFI	180
SHIRE	181
SUCAMPO PHARMACEUTICALS INC.	181
SYNERGY PHARMACEUTICALS INC.	181
SYNTHETIC BIOLOGICS	182
TAIHO PHARMACEUTICAL CO., LTD.	182
TAKEDA PHARMACEUTICALS	182
VALEANT PHARMACEUTICALS	183

**LIST OF TABLES**

<b>TABLE HEADING</b>	<b>PAGE NO.</b>
SUMMARY TABLE GLOBAL MARKET FOR GASTROINTESTINAL DISORDER THERAPEUTICS AND DIAGNOSTICS, BY CATEGORY, THROUGH 2021 (\$ MILLIONS)	10
TABLE 1 U.S. INCIDENCE OF INDIVIDUAL PATHOGENS	12
TABLE 2 ESTIMATED INCIDENCE/PREVALENCE/MORTALITY OF SELECTED GI CONDITIONS IN THE U.S.	13
TABLE 3 GASTRIC CANCER PREVALENCE, 2012-2021 (THOUSANDS)	14
TABLE 4 PREVALENCE ESTIMATES OF IBD, BY COUNTRY (%)	15
TABLE 5 U.S. PREVALENCE OF INFLAMMATORY BOWEL DISEASE (NUMBER OF CASES PER 100,000 POPULATION)	16
TABLE 6 U.S. INCIDENCE OF INFLAMMATORY BOWEL DISEASE (NUMBER OF NEWLY DIAGNOSED CASES PER 100,000 PERSON-YEARS)	16
TABLE 7 GLOBAL PREVALENCE OF INFLAMMATORY BOWEL DISEASE	16
TABLE 8 COMMONLY USED LAXATIVE AGENTS	17
TABLE 9 PREVALENCE OF GERD SYMPTOMS (%)	18
TABLE 10 U.S. STATES THAT PROVIDE COMPLETE RANGE OF COLORECTAL DIAGNOSTIC SCREENING	47
TABLE 11 GLOBAL MARKET FOR PRESCRIPTION GI THERAPIES, BY CATEGORY, THROUGH 2021 (\$ MILLIONS)	53
TABLE 12 KEY ANTI-DIARRHEAL BRANDS	55
TABLE 13 GLOBAL MARKET FOR PRESCRIPTION ANTIDIARRHEAL THERAPIES, BY REGION, THROUGH 2021 (\$ MILLIONS)	56
TABLE 14 ANTIEMETICS: SITE OF ACTION AND EXAMPLES	57
TABLE 15 MARKETED ANTIEMETIC PRODUCTS	63
TABLE 16 GLOBAL MARKET FOR PRESCRIPTION ANTIEMETIC THERAPIES, BY REGION, THROUGH 2021 (\$ MILLIONS)	64
TABLE 17 MARKETED GASTROINTESTINAL CANCER PRODUCTS	66
TABLE 18 GLOBAL PRESCRIPTION GASTROINTESTINAL CANCER THERAPIES, BY REGION, THROUGH 2021 (\$ MILLIONS)	67
TABLE 19 MARKETED H2 INHIBITOR PRODUCTS	71
TABLE 20 GLOBAL PRESCRIPTION H2 INHIBITOR MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	72
TABLE 21 PROTON PUMP INHIBITORS: THERAPY AND PH	74
TABLE 22 MARKETED PROTON PUMP INHIBITOR PRODUCTS	75
TABLE 23 GLOBAL PRESCRIPTION PROTON PUMP INHIBITOR MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	76
TABLE 24 PHARMACOLOGIC MANAGEMENT OF CHRONIC CONSTIPATION IN THE U.S.	78
TABLE 25 MARKETED LAXATIVE PRODUCTS	78
TABLE 26 PHARMACOLOGIC MANAGEMENT OF CHRONIC CONSTIPATION (IN AND OUTSIDE THE U.S.)	79
TABLE 27 GLOBAL PRESCRIPTION LAXATIVE MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	80
TABLE 28 MARKETED ANTI-INFLAMMATORY BOWEL PRODUCTS	83
TABLE 29 GLOBAL MARKET FOR PRESCRIPTION BOWEL ANT-INFLAMMATORIES, BY REGION, THROUGH 2021 (\$ MILLIONS)	83
TABLE 30 GLOBAL MARKET FOR OTHER PRESCRIPTION GASTROINTESTINAL THERAPIES, BY REGION, THROUGH 2021 (\$ MILLIONS)	85
TABLE 31 KEY BRANDS OF ANTACIDS IN U.S. AND OTHER MARKETS	91
TABLE 32 GLOBAL OTC ANTACID MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	92
TABLE 33 MARKETED OTC ANTIDIARRHEAL PRODUCTS	95

<b>TABLE HEADING</b>	<b>PAGE NO.</b>
TABLE 34 GLOBAL OTC ANTIDIARRHEAL MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	95
TABLE 35 MARKETED OTC H2 INHIBITOR PRODUCTS	99
TABLE 36 GLOBAL MARKET FOR OTC H2 INHIBITORS, BY REGION, THROUGH 2021 (\$ MILLIONS)	99
TABLE 37 MARKETED OTC PROTON PUMP INHIBITOR PRODUCTS	101
TABLE 38 GLOBAL MARKET FOR OTC PROTON PUMP INHIBITORS, BY REGION, THROUGH 2021 (\$ MILLIONS)	101
TABLE 39 MARKETED OTC LAXATIVE PRODUCTS	103
TABLE 40 GLOBAL OTC LAXATIVE MARKET, BY REGION, THROUGH 2021 (\$ MILLIONS)	104
TABLE 41 GLOBAL MARKET FOR OTC GASTROINTESTINAL DRUGS, BY PRODUCT CATEGORY, THROUGH 2021 (\$ MILLIONS)	105
TABLE 42 ENTERIC DISEASE TESTING METHODS	107
TABLE 43 ENTERIC DISEASE DIAGNOSTICS, BY DISEASE TYPE	108
TABLE 44 GLOBAL MARKET FOR DIAGNOSTICS FOR GI DISEASES, BY TYPE, THROUGH 2021 (\$ MILLIONS)	108
TABLE 45 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR CAMPYLOBACTER AND SALMONELLA	109
TABLE 46 GLOBAL MARKET FOR CAMPYLOBACTER DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	110
TABLE 47 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR NOROVIRUSES	112
TABLE 48 GLOBAL MARKET FOR NOROVIRUS DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	114
TABLE 49 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR ROTAVIRUS	116
TABLE 50 GLOBAL MARKET FOR ROTAVIRUS DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	116
TABLE 51 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR GIARDIA PARASITE	118
TABLE 52 GLOBAL MARKET FOR GIARDIA PARASITE DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	119
TABLE 53 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR E. COLI	120
TABLE 54 GLOBAL MARKET FOR E. COLI DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	121
TABLE 55 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR CRYPTOSPORIDIUM	122
TABLE 56 GLOBAL MARKET FOR CRYPTOSPORIDIUM DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	122
TABLE 57 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR SHIGELLA	123
TABLE 58 GLOBAL MARKET FOR SHIGELLA DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	124
TABLE 59 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR SALMONELLA	126
TABLE 60 GLOBAL MARKET FOR TYPHOID DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	126
TABLE 61 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR AMEBIASIS	128
TABLE 62 GLOBAL MARKET FOR AMEBIASIS DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	128
TABLE 63 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR CHOLERA	129
TABLE 64 GLOBAL MARKET FOR CHOLERA DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	130
TABLE 65 COMMERCIALY AVAILABLE MOLECULAR TESTS FOR H. PYLORI	131
TABLE 66 GLOBAL MARKET FOR OTHER (SALMONELLA, H. PYLORI) DIAGNOSTIC TESTS, BY REGION, THROUGH 2021 (\$ MILLIONS)	132

<b>TABLE HEADING</b>	<b>PAGE NO.</b>
TABLE 67 EMERGING NOVEL DIAGNOSTIC AND THERAPEUTIC ENDOSCOPIC TECHNIQUES	133
TABLE 68 GLOBAL MARKET FOR MEDICAL DEVICES (ENDOSCOPY), BY REGION, THROUGH 2021 (\$ MILLIONS)	135
TABLE 69 GLOBAL MARKET FOR GASTRO-DIAGNOSTICS, THROUGH 2021 (\$ MILLIONS)	136
TABLE 70 DEVELOPMENTAL PIPELINE OF GI THERAPIES	140
TABLE 71 PATENTS ISSUED	145
TABLE 72 PATENTS APPLIED	161

**LIST OF FIGURES**

<b>FIGURE TITLE</b>	<b>PAGE NO.</b>
SUMMARY FIGURE GLOBAL MARKET FOR GASTROINTESTINAL DISORDER THERAPEUTICS AND DIAGNOSTICS, BY CATEGORY, 2015-2021 (\$ MILLIONS)	10
FIGURE 1 GLOBAL MARKET FOR PRESCRIPTION ANTIDIARRHEAL THERAPIES, BY REGION, 2015-2021 (\$ MILLIONS)	56
FIGURE 2 GLOBAL MARKET FOR PRESCRIPTION ANTIEMETIC THERAPIES, BY REGION, 2015-2021 (\$ MILLIONS)	64
FIGURE 3 GLOBAL PRESCRIPTION GASTROINTESTINAL CANCER THERAPIES, BY REGION, 2015-2021 (\$ MILLIONS)	67
FIGURE 4 GLOBAL PRESCRIPTION H2 INHIBITOR MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	72
FIGURE 5 GLOBAL PRESCRIPTION PROTON PUMP INHIBITOR MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	76
FIGURE 6 GLOBAL PRESCRIPTION LAXATIVE MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	80
FIGURE 7 GLOBAL MARKET FOR PRESCRIPTION BOWEL ANTI-INFLAMMATORIES, BY REGION, 2015-2021 (\$ MILLIONS)	83
FIGURE 8 GLOBAL MARKET FOR OTHER PRESCRIPTION GASTROINTESTINAL THERAPIES, BY REGION, 2015-2021 (\$ MILLIONS)	85
FIGURE 9 GLOBAL OTC ANTACID MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	92
FIGURE 10 GLOBAL OTC ANTIDIARRHEAL MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	96
FIGURE 11 GLOBAL MARKET FOR OTC H2 INHIBITORS, BY REGION, 2015-2021 (\$ MILLIONS)	99
FIGURE 12 GLOBAL MARKET FOR OTC PROTON PUMP INHIBITORS, BY REGION, 2015-2021 (\$ MILLIONS)	102
FIGURE 13 GLOBAL OTC LAXATIVE MARKET, BY REGION, 2015-2021 (\$ MILLIONS)	104
FIGURE 14 GLOBAL MARKET FOR OTC GASTROINTESTINAL DRUGS, BY PRODUCT CATEGORY, 2015-2021 (\$ MILLIONS)	105
FIGURE 15 GLOBAL MARKET FOR DIAGNOSTICS FOR GI DISEASES, BY TYPE, 2015-2021 (\$ MILLIONS)	109
FIGURE 16 GLOBAL MARKET FOR CAMPYLOBACTER DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	110
FIGURE 17 GLOBAL MARKET FOR NOROVIRUS DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	114
FIGURE 18 GLOBAL MARKET FOR ROTAVIRUS DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	116
FIGURE 19 GLOBAL MARKET FOR GIARDIA PARASITE DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	119
FIGURE 20 GLOBAL MARKET FOR E. COLI DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	121
FIGURE 21 GLOBAL MARKET FOR CRYPTOSPORIDIUM DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	123
FIGURE 22 GLOBAL MARKET FOR SHIGELLA DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	125
FIGURE 23 GLOBAL MARKET FOR TYPHOID DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	126
FIGURE 24 GLOBAL MARKET FOR AMEBIASIS DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	128
FIGURE 25 GLOBAL MARKET FOR CHOLERA DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	130

<b>FIGURE TITLE</b>	<b>PAGE NO.</b>
FIGURE 26 GLOBAL MARKET FOR OTHER (SALMONELLA, H. PYLORI) DIAGNOSTIC TESTS, BY REGION, 2015-2021 (\$ MILLIONS)	132
FIGURE 27 GLOBAL MARKET FOR MEDICAL DEVICES (ENDOSCOPY), BY REGION, 2015-2021 (\$ MILLIONS)	135
FIGURE 28 GLOBAL MARKET FOR GASTRO-DIAGNOSTICS, 2015-2021 (\$ MILLIONS)	137