

| | |
|---|----|
| CHAPTER ONE: INTRODUCTION..... | 1 |
| STUDY GOALS AND OBJECTIVES..... | 1 |
| REASONS FOR STUDY..... | 1 |
| SCOPE OF STUDY..... | 1 |
| METHODOLOGY AND INFORMATION SOURCES..... | 2 |
| ANALYST CREDENTIALS..... | 2 |
| RELATED BCC REPORTS..... | 2 |
| BCC ONLINE SERVICES..... | 3 |
| DISCLAIMER..... | 3 |
| CHAPTER TWO: EXECUTIVE SUMMARY..... | 4 |
| EXECUTIVE SUMMARY..... | 4 |
| <i>SUMMARY TABLE TOTAL GLOBAL MARKET SIZE AND FORECAST FOR CHF PHARMACEUTICALS, THROUGH 2016 (\$ MILLIONS)</i> | 5 |
| <i>GLOBAL SUMMARY FIGURE TOTAL GLOBAL MARKET SIZE AND FORECAST FOR CHF PHARMACEUTICALS, 2010–2016 (\$ MILLIONS)</i> | 6 |
| EXECUTIVE SUMMARY (CONTINUED)..... | 7 |
| CHAPTER THREE: OVERVIEW..... | 8 |
| ETIOLOGY..... | 8 |
| SYSTOLIC FAILURE..... | 9 |
| DIASTOLIC FAILURE..... | 10 |
| COMPENSATION..... | 10 |
| SYMPATHETIC NERVOUS SYSTEM ACTIVATION..... | 11 |
| INCREASED PRELOAD..... | 11 |
| MYOCARDIAL HYPERTROPHY..... | 12 |
| CLINICAL PRESENTATION OF CHF..... | 12 |
| LEFT-SIDED HEART FAILURE..... | 12 |
| RIGHT-SIDED HEART FAILURE..... | 13 |
| BIVENTRICULAR HEART FAILURE..... | 14 |
| DEMOGRAPHICS..... | 14 |
| <i>TABLE 1 TOTAL GLOBAL POPULATION BY SELECTED GEOGRAPHIC REGION, 2000–2050 (MILLIONS/% CHANGE)</i> | 15 |
| <i>FIGURE 1 TOTAL GLOBAL POPULATION BY SELECTED GEOGRAPHIC REGION, 2000–2050 (MILLIONS)</i> | 16 |
| TREATMENTS..... | 17 |
| MANAGEMENT OF PRELOAD..... | 17 |
| MANAGEMENT OF AFTERLOAD..... | 18 |
| MANAGEMENT OF CONTRACTILITY..... | 18 |
| ARB IMPACT ON ALZHEIMER’S DISEASE RISK..... | 19 |
| PRODUCTS..... | 20 |
| ACE INHIBITORS..... | 20 |

| | |
|---|----|
| <i>TABLE 2 SELECTED ACE INHIBITORS AVAILABLE FOR THE TREATMENT OF CHF</i> | 21 |
| Accupril/Accupro | 21 |
| Aceon | 21 |
| Capoten | 22 |
| Coversyl | 22 |
| Lotensin | 22 |
| Mavik | 22 |
| Monopril | 22 |
| Prinivil/Zestril | 23 |
| Tarka | 23 |
| Tritace/Altace | 23 |
| Univasc | 23 |
| Vasotec | 23 |
| ANGIOTENSIN II RECEPTOR BLOCKERS | 24 |
| Atacand/Blopress | 24 |
| Avapro/Avalide | 24 |
| Benicar | 24 |
| Cozaar/Hyzaar | 25 |
| Diovan-Co-Diovan | 25 |
| Micardis | 26 |
| Teveten | 27 |
| <i>TABLE 3 SELECTED ANGIOTENSIN II RECEPTOR BLOCKERS AVAILABLE FOR THE TREATMENT OF CHF</i> | 28 |
| BETA-ADRENERGIC BLOCKING AGENTS | 28 |
| Betapace | 28 |
| Blocadren | 28 |
| Brevibloc | 29 |
| Coreg | 29 |
| Corgard | 29 |
| Inderal | 29 |
| Kerlone | 29 |
| Sectral | 30 |
| Tenormin | 30 |
| Toprol XL/Seloken ZOK/Betaloc | 30 |
| Zebeta | 30 |
| <i>TABLE 4 SELECTED BETA-ADRENERGIC RECEPTOR BLOCKING AGENTS AVAILABLE FOR THE TREATMENT OF CHF</i> | 31 |
| DIURETICS | 31 |
| Carbonic Anhydrase Inhibitors | 32 |
| Thiazide and Thiazide-like Diuretics | 33 |
| Diuril | 34 |
| Enduron | 34 |
| Hydrodiuril | 34 |

| | |
|--|-----------|
| Hygroton..... | 34 |
| Renese | 34 |
| Potassium-Sparing Diuretics | 34 |
| Aldactone..... | 35 |
| Dyrenium | 35 |
| Midamor | 35 |
| Loop Diuretics..... | 35 |
| Lasix | 35 |
| <i>TABLE 5 SELECTED DIURETIC AGENTS AVAILABLE FOR THE</i> | |
| <i>TREATMENT OF CHF</i> | <i>36</i> |
| POSITIVE INOTROPICS | 37 |
| Inocor..... | 38 |
| Lanoxicaps/Lanoxin..... | 38 |
| <i>TABLE 6 SELECTED POSITIVE INOTROPIC DRUGS AVAILABLE</i> | |
| <i>FOR THE TREATMENT OF CHF.....</i> | <i>39</i> |
| VASODILATORS | 39 |
| ISMO | 40 |
| Nitro-Dur Transdermal..... | 40 |
| Nitrostat..... | 40 |
| <i>TABLE 7 SELECTED VASODILATORS AVAILABLE FOR THE</i> | |
| <i>TREATMENT OF CHF</i> | <i>40</i> |
| RESEARCH AND DEVELOPMENT | 41 |
| BYSTOLIC..... | 41 |
| GENCARO | 41 |
| JENLOGA XR..... | 41 |
| LIXIVAPTAN | 42 |
| LCZ696..... | 42 |
| RLX030 | 42 |
| TEKTURNA..... | 43 |
| MYOCELL | 43 |
| ALBIGLUTIDE | 43 |
| ALD-201..... | 43 |
| ALLOGENIC ADULT STEM CELL..... | 44 |
| AMG 423..... | 44 |
| IK-5001 | 44 |
| IROXANADINE..... | 44 |
| PL-3994..... | 44 |
| SLX2101..... | 45 |
| UROCORTIN 2..... | 45 |
| ADX415..... | 45 |
| GLIAL GROWTH FACTOR 2..... | 45 |
| JVS-100..... | 46 |
| BR-4628 | 46 |
| MYOBLAST THERAPY | 46 |

| | |
|---|----|
| <i>TABLE 8 PRODUCTS IN DEVELOPMENT TO TREAT CHF</i> | 47 |
| CHAPTER FOUR: THE GLOBAL MARKET..... | 48 |
| THE GLOBAL MARKET..... | 48 |
| <i>TABLE 9 GLOBAL MARKET FORECAST FOR CHF</i> | |
| <i>PHARMACEUTICALS BY REGION, THROUGH 2016 (\$ MILLIONS)</i> | 49 |
| <i>FIGURE 2 GLOBAL MARKET FORECAST FOR CHF</i> | |
| <i>PHARMACEUTICALS BY REGION, 2010–2016 (\$ MILLIONS)</i> | 50 |
| GROWTH BY GEOGRAPHIC REGION..... | 50 |
| <i>TABLE 10 GLOBAL MARKET SHARES OF CHF PHARMACEUTICAL</i> | |
| <i>REVENUES BY REGION, 2011 (%)</i> | 51 |
| <i>FIGURE 3 GLOBAL MARKET SHARES OF CHF PHARMACEUTICAL</i> | |
| <i>REVENUES BY REGION, 2011 (%)</i> | 51 |
| GROWTH BY DRUG CLASS..... | 51 |
| GROWTH BY DRUG CLASS (CONTINUED)..... | 52 |
| <i>TABLE 11 GLOBAL CHF MARKET BY DRUG TYPE, THROUGH 2016</i> | |
| <i>(\$ MILLIONS)</i> | 53 |
| <i>FIGURE 4 GLOBAL CHF MARKET BY DRUG TYPE, 2010-2016 (\$</i> | |
| <i>MILLIONS)</i> | 53 |
| <i>TABLE 12 GLOBAL CHF MARKET SHARES BY DRUG TYPE, 2011 (%)</i> | 54 |
| <i>FIGURE 5 GLOBAL CHF MARKET SHARES BY DRUG TYPE, 2011 (%)</i> | 55 |
| <i>TABLE 13 GLOBAL CHF MARKET SHARES BY DRUG TYPE, 2016 (%)</i> | 55 |
| <i>FIGURE 6 GLOBAL CHF MARKET SHARES BY DRUG TYPE, 2016 (%)</i> | 56 |
| COMPETITIVE ANALYSIS..... | 56 |
| <i>TABLE 14 GLOBAL CHF PHARMACEUTICAL MARKET BY</i> | |
| <i>COMPANY, 2011 (\$ MILLIONS)</i> | 57 |
| <i>FIGURE 7 GLOBAL CHF PHARMACEUTICAL MARKET SHARES BY</i> | |
| <i>COMPANY, 2011 (%)</i> | 58 |
| <i>TABLE 15 GLOBAL CHF MANUFACTURER PRODUCT</i> | |
| <i>PARTICIPATION BY DRUG TYPE</i> | 58 |
| <i>TABLE 15 (CONTINUED)</i> | 59 |
| CHAPTER FIVE: THE AMERICAS MARKET..... | 60 |
| REGIONAL MARKETS..... | 60 |
| NORTH AMERICA..... | 60 |
| United States..... | 60 |
| Canada..... | 61 |
| LATIN AND SOUTH AMERICA..... | 62 |
| Brazil..... | 63 |
| Brazil (Continued)..... | 64 |
| Brazil (Continued)..... | 65 |
| Mexico..... | 66 |
| Venezuela..... | 67 |
| Argentina..... | 68 |
| Peru, Officially the Republic of Peru..... | 68 |

| | |
|--|-----------|
| Chile | 69 |
| Colombia | 70 |
| Cuba | 71 |
| CHF POPULATION..... | 71 |
| <i>TABLE 16 CHF POPULATION IN THE AMERICAS BY COUNTRY,</i> | |
| <i>2011</i> | <i>72</i> |
| REGIONAL DEMOGRAPHICS | 72 |
| NORTH AMERICA | 72 |
| United States | 72 |
| <i>TABLE 17 U.S.' OLDER POPULATION BY AGE GROUP AND CENSUS</i> | |
| <i>YEAR, 2000–2050.....</i> | <i>72</i> |
| <i>TABLE 17 (CONTINUED).....</i> | <i>73</i> |
| Canada | 73 |
| <i>TABLE 18 CANADA'S OLDER POPULATION BY AGE GROUP AND</i> | |
| <i>CENSUS YEAR, 2000–2050.....</i> | <i>73</i> |
| LATIN AND SOUTH AMERICA..... | 74 |
| Brazil..... | 74 |
| <i>TABLE 19 BRAZIL'S OLDER POPULATION BY AGE GROUP AND</i> | |
| <i>CENSUS YEAR, 2000–2050.....</i> | <i>74</i> |
| Mexico | 75 |
| <i>TABLE 20 MEXICO'S OLDER POPULATION BY AGE GROUP AND</i> | |
| <i>CENSUS YEAR, 2000–2010.....</i> | <i>75</i> |
| Venezuela..... | 75 |
| <i>TABLE 21 VENEZUELA'S OLDER POPULATION BY AGE GROUP</i> | |
| <i>AND CENSUS YEAR, 2000–2050.....</i> | <i>76</i> |
| Argentina | 76 |
| <i>TABLE 22 ARGENTINA'S OLDER POPULATION BY AGE GROUP AND</i> | |
| <i>CENSUS YEAR, 2000–2050.....</i> | <i>76</i> |
| Peru | 77 |
| <i>TABLE 23 PERU'S OLDER POPULATION BY AGE GROUP AND</i> | |
| <i>CENSUS YEAR, 2000–2050.....</i> | <i>77</i> |
| Chile | 77 |
| <i>TABLE 24 CHILE'S OLDER POPULATION BY AGE GROUP AND</i> | |
| <i>CENSUS YEAR, 2000–2050.....</i> | <i>78</i> |
| Colombia | 78 |
| <i>TABLE 25 COLOMBIA'S OLDER POPULATION BY AGE GROUP AND</i> | |
| <i>CENSUS YEAR, 2000–2050.....</i> | <i>78</i> |
| Cuba | 79 |
| <i>TABLE 26 CUBA'S OLDER POPULATION BY AGE GROUP AND</i> | |
| <i>CENSUS YEAR, 2000–2050.....</i> | <i>79</i> |
| AMERICAS CHF MARKET FORECAST..... | 79 |
| <i>TABLE 27 AMERICAS CHF PHARMACEUTICAL MARKET BY</i> | |
| <i>GEOGRAPHIC REGION, THROUGH 2016 (\$ MILLIONS).....</i> | <i>80</i> |

| | |
|---|----|
| <i>FIGURE 8 AMERICAS CHF MARKET BY GEOGRAPHIC REGION, 2011 (\$ MILLIONS)</i> | 80 |
| <i>TABLE 28 AMERICAS CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 81 |
| <i>TABLE 29 AMERICAS CHF MARKET SHARES BY DRUG TYPE, 2011 (%)</i> | 82 |
| <i>FIGURE 9 AMERICAS CHF MARKET SHARES BY DRUG TYPE, 2011 (%)</i> | 82 |
| <i>TABLE 30 AMERICAS CHF MARKET SHARES BY DRUG TYPE, 2016 (%)</i> | 83 |
| <i>FIGURE 10 AMERICAS CHF MARKET SHARES BY DRUG TYPE, 2016 (%)</i> | 83 |
| <i>TABLE 31 U.S. CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 84 |
| <i>TABLE 32 CANADIAN CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 84 |
| <i>TABLE 33 LATIN AMERICAN/SOUTH AMERICAN CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 85 |
| CHAPTER SIX: THE EUROPEAN MARKET | 86 |
| REGIONAL MARKETS..... | 86 |
| FRANCE..... | 86 |
| France (Continued)..... | 87 |
| GERMANY | 88 |
| ITALY | 89 |
| Italy (Continued) | 90 |
| SPAIN | 91 |
| UNITED KINGDOM..... | 91 |
| United Kingdom (Continued)..... | 92 |
| United Kingdom (Continued)..... | 93 |
| <i>TABLE 34 EUROPEAN CHF POPULATION BY COUNTRY, 2011</i> | 94 |
| REGIONAL DEMOGRAPHICS | 94 |
| FRANCE..... | 94 |
| <i>TABLE 35 FRANCE'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000-2050</i> | 94 |
| GERMANY | 95 |
| <i>TABLE 36 GERMANY'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000-2050</i> | 95 |
| ITALY | 95 |
| <i>TABLE 37 ITALY'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000-2050</i> | 96 |
| SPAIN | 96 |
| <i>TABLE 38 SPAIN'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000-2050</i> | 97 |
| UNITED KINGDOM..... | 97 |

| | |
|--|-----|
| <i>TABLE 39 U.K.'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000–2050</i> | 97 |
| EUROPEAN MARKET FORECAST..... | 98 |
| <i>TABLE 40 EUROPEAN CHF PHARMACEUTICALS MARKET BY GEOGRAPHIC REGION, THROUGH 2016 (\$ MILLIONS)</i> | 99 |
| <i>FIGURE 11 EUROPEAN CHF PHARMACEUTICALS MARKET BY GEOGRAPHIC REGION, 2011 (\$ MILLIONS)</i> | 100 |
| <i>FIGURE 12 EUROPEAN CHF PHARMACEUTICALS MARKET BY GEOGRAPHIC REGION, 2016 (\$ MILLIONS)</i> | 100 |
| <i>TABLE 41 EUROPEAN CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 101 |
| <i>TABLE 42 EUROPEAN MARKET SHARES OF CHF PHARMACEUTICALS BY TYPE, 2011 (%)</i> | 101 |
| <i>FIGURE 13 EUROPEAN MARKET SHARES OF CHF PHARMACEUTICALS BY TYPE, 2011 (%)</i> | 102 |
| <i>TABLE 43 EUROPEAN MARKET SHARES OF CHF PHARMACEUTICALS BY TYPE, 2016</i> | 102 |
| <i>FIGURE 14 EUROPEAN MARKET SHARES OF CHF PHARMACEUTICALS BY TYPE, 2016 (%)</i> | 103 |
| <i>TABLE 44 CHF MARKET IN FRANCE BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 103 |
| <i>TABLE 45 CHF MARKET IN GERMANY BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 104 |
| <i>TABLE 46 CHF MARKET IN ITALY BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 104 |
| <i>TABLE 47 CHF MARKET IN SPAIN BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 105 |
| <i>TABLE 48 U.K. CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)</i> | 105 |
| CHAPTER SEVEN: THE ASIAN MARKET | 106 |
| THE ASIAN MARKET | 106 |
| <i>TABLE 49 ASIAN CHF POPULATION BY COUNTRY, 2011</i> | 107 |
| DEMOGRAPHICS | 107 |
| JAPAN | 107 |
| <i>TABLE 50 JAPAN'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000–2050</i> | 108 |
| CHINA | 108 |
| <i>TABLE 51 CHINA'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000–2050</i> | 108 |
| REGIONAL MARKETS..... | 109 |
| JAPAN | 109 |
| CHINA | 110 |
| China (Continued) | 111 |
| China (Continued) | 112 |

| | |
|---|-----|
| ASIAN CHF MARKET FORECAST | 113 |
| TABLE 52 ASIAN CHF MARKET BY GEOGRAPHIC REGION, THROUGH 2016 (\$ MILLIONS)..... | 114 |
| FIGURE 15 ASIAN CHF MARKET BY GEOGRAPHIC REGION, 2011 (\$ MILLIONS)..... | 114 |
| FIGURE 16 ASIAN CHF MARKET BY GEOGRAPHIC REGION, 2016 (\$ MILLIONS)..... | 115 |
| TABLE 53 ASIAN CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 115 |
| TABLE 54 ASIAN CHF MARKET SHARES BY DRUG TYPE, 2011 (%)..... | 116 |
| FIGURE 17 ASIAN CHF MARKET SHARES BY DRUG TYPE, 2011 (%) | 116 |
| TABLE 55 ASIAN CHF MARKET SHARES BY DRUG TYPE, 2016 (%)..... | 117 |
| FIGURE 18 ASIAN CHF MARKET SHARES BY DRUG TYPE, 2016 (%) | 117 |
| TABLE 56 JAPAN'S CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 118 |
| TABLE 57 CHINA'S CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 118 |
| CHAPTER EIGHT: REST-OF-WORLD/EMERGING MARKETS | 119 |
| REGIONAL DEMOGRAPHICS | 119 |
| TABLE 58 THE REST OF THE WORLD'S CHF POPULATION BY COUNTRY, 2011..... | 119 |
| AUSTRALIA..... | 119 |
| TABLE 59 AUSTRALIA'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000–2050..... | 120 |
| INDIA | 120 |
| TABLE 60 INDIA'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000–2050..... | 121 |
| ISRAEL..... | 121 |
| TABLE 61 ISRAEL'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000–2050..... | 121 |
| RUSSIA..... | 122 |
| TABLE 62 RUSSIA'S OLDER POPULATION BY AGE GROUP AND CENSUS YEAR, 2000–2050..... | 122 |
| REGIONAL MARKETS..... | 122 |
| AUSTRALIA..... | 122 |
| INDIA | 123 |
| India (Continued)..... | 124 |
| India (Continued)..... | 125 |
| ISRAEL..... | 126 |
| Israel (Continued)..... | 127 |
| RUSSIA..... | 128 |
| ROW MARKET FORECAST | 129 |
| INDIA | 129 |
| ISRAEL/MIDDLE EAST..... | 129 |

| | |
|---|-----|
| AUSTRALIA..... | 130 |
| RUSSIA..... | 130 |
| TABLE 63 REST OF WORLD CHF PHARMACEUTICAL MARKET BY GEOGRAPHIC REGION, THROUGH 2016 (\$ MILLIONS)..... | 131 |
| FIGURE 19 REST OF WORLD CHF PHARMACEUTICAL MARKET BY GEOGRAPHIC REGION, 2010-2016 (\$ MILLIONS)..... | 131 |
| TABLE 64 REST OF WORLD CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 132 |
| TABLE 65 REST OF WORLD CHF MARKET SHARES BY DRUG TYPE, 2011 (%)..... | 132 |
| FIGURE 20 REST OF WORLD CHF MARKET SHARES BY DRUG TYPE, 2011 (%)..... | 133 |
| TABLE 66 REST OF WORLD CHF MARKET SHARES BY DRUG TYPE, 2016..... | 133 |
| FIGURE 21 REST OF WORLD CHF MARKET SHARES BY DRUG TYPE, 2016 (%)..... | 134 |
| TABLE 67 AUSTRALIAN CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 134 |
| TABLE 68 INDIA'S CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 135 |
| TABLE 69 ISRAEL/THE MIDDLE EAST'S CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 135 |
| TABLE 70 RUSSIAN CHF MARKET BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 136 |
| TABLE 71 OTHER CHF MARKETS BY DRUG TYPE, THROUGH 2016 (\$ MILLIONS)..... | 136 |
| CHAPTER NINE COMPANY PROFILES | 137 |
| ABBOTT LABORATORIES..... | 137 |
| HISTORY..... | 137 |
| PRODUCTS | 138 |
| REVENUE HISTORY | 138 |
| LOCATIONS..... | 138 |
| CORPORATE MANAGEMENT | 138 |
| ARCA BIOPHARMA..... | 139 |
| HISTORY..... | 139 |
| PRODUCTS | 139 |
| REVENUE HISTORY | 139 |
| CORPORATE MANAGEMENT | 139 |
| ASTRAZENECA..... | 140 |
| HISTORY..... | 140 |
| PRODUCTS | 140 |
| REVENUE HISTORY | 141 |
| LOCATIONS..... | 141 |
| CORPORATE MANAGEMENT | 141 |

| | |
|------------------------------------|-----|
| AUROBINDO PHARMA..... | 141 |
| HISTORY..... | 141 |
| PRODUCTS..... | 141 |
| REVENUE HISTORY..... | 142 |
| LOCATIONS..... | 142 |
| CORPORATE MANAGEMENT..... | 142 |
| BAYER AG..... | 142 |
| HISTORY..... | 142 |
| PRODUCTS..... | 143 |
| REVENUE HISTORY..... | 143 |
| LOCATIONS..... | 143 |
| CORPORATE MANAGEMENT..... | 143 |
| BIOHEART, INC..... | 144 |
| HISTORY..... | 144 |
| PRODUCTS..... | 144 |
| REVENUE HISTORY..... | 144 |
| LOCATIONS..... | 144 |
| CORPORATE MANAGEMENT..... | 145 |
| BOEHRINGER INGELHEIM GMBH..... | 145 |
| HISTORY..... | 145 |
| PRODUCTS..... | 145 |
| REVENUE HISTORY..... | 145 |
| LOCATIONS..... | 146 |
| CORPORATE MANAGEMENT..... | 146 |
| BRISTOL-MYERS SQUIBB CO..... | 146 |
| HISTORY..... | 146 |
| PRODUCTS..... | 147 |
| REVENUE HISTORY..... | 147 |
| LOCATIONS..... | 147 |
| CORPORATE MANAGEMENT..... | 147 |
| CARDIOKINE, INC..... | 147 |
| HISTORY..... | 148 |
| PRODUCTS..... | 148 |
| REVENUE HISTORY..... | 148 |
| LOCATIONS..... | 148 |
| CORPORATE MANAGEMENT..... | 148 |
| DR. REDDY'S LABORATORIES, LTD..... | 148 |
| HISTORY..... | 149 |
| PRODUCTS..... | 149 |
| REVENUE HISTORY..... | 149 |
| CORPORATE MANAGEMENT..... | 149 |
| FOREST LABORATORIES, INC..... | 149 |
| HISTORY..... | 150 |
| PRODUCTS..... | 151 |

| | |
|------------------------------------|-----|
| REVENUE HISTORY | 151 |
| LOCATIONS..... | 151 |
| CORPORATE MANAGEMENT | 151 |
| GLAXOSMITHKLINE..... | 151 |
| HISTORY..... | 152 |
| PRODUCTS..... | 152 |
| REVENUE HISTORY | 152 |
| LOCATIONS..... | 152 |
| CORPORATE MANAGEMENT | 153 |
| MERCK | 153 |
| HISTORY..... | 153 |
| PRODUCTS | 153 |
| REVENUE HISTORY | 154 |
| LOCATIONS..... | 154 |
| CORPORATE MANAGEMENT | 154 |
| MITSUBISHI TANABE PHARMA CORP..... | 154 |
| HISTORY..... | 155 |
| PRODUCTS | 155 |
| REVENUE HISTORY | 155 |
| LOCATIONS..... | 155 |
| CORPORATE MANAGEMENT | 155 |
| MYLAN, INC..... | 155 |
| HISTORY..... | 156 |
| PRODUCTS | 156 |
| REVENUE HISTORY | 156 |
| CORPORATE MANAGEMENT | 156 |
| NEUROCRINE BIOSCIENCES..... | 157 |
| HISTORY..... | 157 |
| PRODUCTS | 157 |
| REVENUE HISTORY | 157 |
| CORPORATE MANAGEMENT | 157 |
| NOVARTIS..... | 158 |
| HISTORY..... | 158 |
| PRODUCTS | 158 |
| REVENUE HISTORY | 159 |
| LOCATIONS..... | 159 |
| CORPORATE MANAGEMENT | 159 |
| PFIZER, INC..... | 159 |
| HISTORY..... | 159 |
| PRODUCTS | 160 |
| REVENUE HISTORY | 160 |
| CORPORATE MANAGEMENT | 160 |
| SANOFI-AVENTIS, INC. | 161 |
| HISTORY..... | 161 |

| | |
|--|-----|
| PRODUCTS..... | 161 |
| REVENUE HISTORY | 162 |
| LOCATIONS..... | 162 |
| CORPORATE MANAGEMENT | 162 |
| SERVIER..... | 162 |
| HISTORY..... | 162 |
| PRODUCTS | 162 |
| REVENUE HISTORY | 163 |
| LOCATIONS..... | 163 |
| CORPORATE MANAGEMENT | 163 |
| SHIONOGI & CO., LTD. | 163 |
| HISTORY..... | 163 |
| PRODUCTS | 164 |
| REVENUE HISTORY | 164 |
| LOCATIONS..... | 164 |
| CORPORATE MANAGEMENT | 164 |
| TAKEDA PHARMACEUTICALS CO., LTD..... | 164 |
| HISTORY..... | 165 |
| PRODUCTS | 165 |
| REVENUE HISTORY | 166 |
| LOCATIONS..... | 166 |
| CORPORATE MANAGEMENT | 166 |
| TEVA..... | 166 |
| HISTORY..... | 166 |
| PRODUCTS | 167 |
| REVENUE HISTORY | 167 |
| LOCATIONS..... | 167 |
| CORPORATE MANAGEMENT | 167 |
| APPENDIX: DIRECTORY OF COMPANIES | 168 |
| APPENDIX: DIRECTORY OF COMPANIES..... | 168 |
| APPENDIX (CONTINUED) | 169 |
| APPENDIX (CONTINUED) | 170 |
| APPENDIX (CONTINUED) | 171 |
| APPENDIX (CONTINUED) | 172 |
| APPENDIX (CONTINUED) | 173 |
| APPENDIX (CONTINUED) | 174 |
| APPENDIX (CONTINUED) | 175 |
| APPENDIX (CONTINUED) | 176 |
| APPENDIX (CONTINUED) | 177 |
| APPENDIX (CONTINUED) | 178 |
| APPENDIX (CONTINUED) | 179 |
| APPENDIX (CONTINUED) | 180 |
| APPENDIX (CONTINUED) | 181 |
| APPENDIX (CONTINUED) | 182 |

| | |
|----------------------------|-----|
| APPENDIX (CONTINUED) | 183 |
| APPENDIX (CONTINUED) | 184 |