

## Biopharmaceuticals – A Global Market Overview

*“The report reviews, analyzes and projects the market for biopharmaceuticals for the period 2016-2025. Biopharmaceuticals product segments analyzed in this study comprises Monoclonal Antibodies (moAb), Erythropoietin, Biotech Vaccines, Recombinant Human (RH) Insulin, Granulocyte Colony-Stimulating Factor (G-CSF), Interferons, Human Growth Hormones (HGH) and Others. Applications or therapeutic areas analyzed in this study comprise Oncology, Autoimmune Disorders, Diabetes, Inflammatory & Infectious Diseases, Neurological Diseases, Cardiovascular Diseases and Others.”*

Published: May 2019

Report Code: BT001

Pages: 480

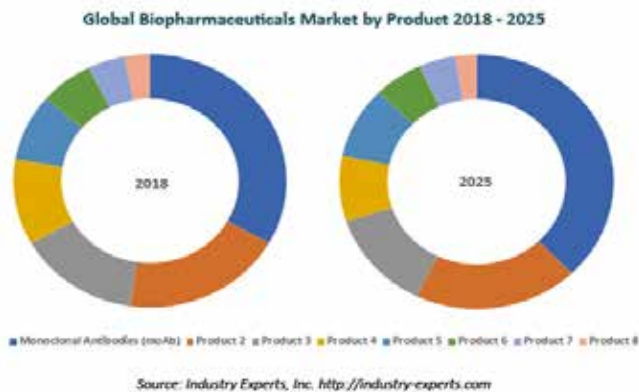
Charts: 256

Price: \$4500 Single User License, \$7200 Enterprise License

### Report Synopsis

The biopharmaceuticals market is driven by various factors, such as increase in elderly population, surge in prevalence of chronic diseases like cancer, HIV/AIDS and diabetes, and increase in adoption of biopharmaceuticals globally. Biopharmaceuticals offer several benefits including highly effective and potent action, fewer side effects, and the potential to actually cure diseases rather than merely treat the symptoms, which have significantly increased the demand for biopharmaceutical products. The market growth is attributed to the growing acceptance for biopharmaceuticals due to their ability to treat previously untreatable diseases, resulting in huge market demand for biopharmaceuticals.

Global demand for Biopharmaceuticals by product is led by Monoclonal Antibodies (moAb), estimated at US\$82.3 billion (33.2% share) in 2018, and is also projected to witness the fastest CAGR of 10.8% between 2018 and 2025. The global market for biopharmaceuticals in 2019 is expected to reach US\$269.3 billion.



### Research Findings & Coverage

- The Biopharmaceuticals global market explored in this study with respect to product types and application areas
- The study extensively analyzes above mentioned product types and applications of Biopharmaceuticals in each major region/country globally for the analysis period

- Lanadelumab Effective in Reducing Swelling Attacks in Patients with Hereditary Angioedema
- Emerging Innovations and their Impact on Biopharma Manufacturing in the Coming Years
- Monoclonal Antibodies Show High Potential Against Zika Virus Infection
- Portable Bioreactor Produces Biopharmaceutical Drugs on Demand at a Point of Care
- Key business trends focusing on product innovations/developments, M&As, JVs and other recent industry developments
- Major companies profiled – 58
- The industry guide includes the contact details for 843 companies

### Product Outline

The report analyzes the market for the product types of Biopharmaceuticals including:

- Monoclonal Antibodies (moAb)
- Biotech Vaccines
- Recombinant Human (RH) Insulin
- Erythropoietin
- Granulocyte Colony-Stimulating Factor (G-CSF)
- Interferons
- Human Growth Hormones (HGH)
- Other Biopharmaceuticals

Application Areas of Biopharmaceuticals analyzed comprise the following:

- Oncology
- Autoimmune Disorders
- Diabetes
- Inflammatory and Infectious Diseases
- Neurological Diseases
- Cardiovascular Diseases
- Others

### Analysis Period, Units and Growth Rates

- The report reviews, analyzes and projects the global Biopharmaceuticals market for the period 2016-2025 in terms of market value in US\$ and the compound annual growth rates (CAGRs) projected from 2018 through 2025

### Geographic Coverage

- **North America** (The United States, Canada and Mexico)
- **Europe** (Germany, France, United Kingdom, Italy, Spain and Rest of Europe)
- **Asia-Pacific** (Japan, China, India, South Korea and Rest of Asia-Pacific)
- **South America** (Argentina, Brazil and Rest of South America)
- **Rest of World**

## SAMPLE COMPANY PROFILE

### AMGEN, INC. (UNITED STATES)

One Amgen Center Drive, Thousand Oaks, CA, 91320-1799  
 Phone: +1 805-447-1000, Fax: +1 805-447-1010  
 Website: www.amgen.com

#### Business Profile

Amgen Inc, established in 1980 with headquarters in Thousand Oaks, California, is a biotechnology medicines company, engaged in discovering, developing, manufacturing and marketing human therapeutics based on advances in cellular and molecular biology for serious ailments chiefly in the United States, Europe and Canada. Amgen also engages in providing product candidates in mid- to late-stage development in a range of therapeutic areas, such as oncology/hematology, cardiovascular, inflammation, bone health, nephrology, and neuroscience. The company's products are marketed to healthcare providers, including physicians or their clinics, dialysis centers, hospitals and pharmacies, consumers, and wholesale distributors of pharmaceutical products. Amgen also has collaborations with several leading pharma companies.

#### Product Portfolio

| Product                             | Indication(s)   |
|-------------------------------------|---|
| Aimovig™ (erenumab-aooe)            | For the preventive treatment of migraine in adults.   |
| Aranesp® (darbepoetin alfa)         | For the treatment of anemia due to chronic kidney disease (CKD), including patients on dialysis and patients not on dialysis.   |
| BLINCYTO® (blinatumomab)            | For the treatment of Philadelphia chromosome-negative relapsed or refractory B-cell precursor acute lymphoblastic leukemia (ALL).   |
| Corlanor® (ivabradine)              | For coronary artery disease and chronic heart failure.  |
| Enbrel® (etanercept)                | Indicated for the treatment of rheumatoid arthritis, juvenile idiopathic arthritis, and psoriatic arthritis, ankylosing spondylitis and plaque psoriasis.   |
| EPOGEN® (epoetin alfa)              | For the treatment of anemia due to chronic kidney disease (CKD).  |
| IMLYGIC® (talimogene laherparepvec) | Indicated for the local treatment of unresectable cutaneous, subcutaneous, and nodal lesions in patients with melanoma recurrent after initial surgery.   |
| Kyprolis® (carfilzomib)             | For treatment of multiple myeloma.  |
| Neulasta® (pegfilgrastim)           | Indicated to decrease the incidence of infection in patients with non-myeloid malignancies receiving myelosuppressive chemotherapy associated with a clinically significant incidence of febrile neutropenia and to increase survival in patients acutely exposed to myelosuppressive doses of radiation.   |
| NEUPOGEN® (Filgrastim)              | Used to reduce the duration of neutropenia and incidence of infection in patients receiving myelosuppressive chemotherapy or myeloablative chemotherapy followed by bone marrow transplant; also used for the mobilization of peripheral blood progenitor cells for leukapheresis, for the treatment of severe chronic neutropenia, and to improve survival following acute radiation exposure. |

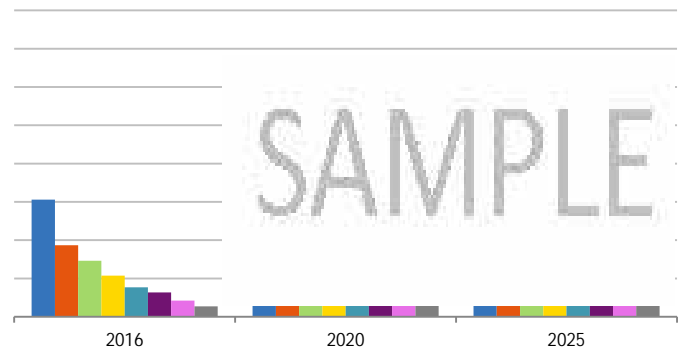
.....more

## SAMPLE TABLE/CHART

Glance at 2019 Global Biopharmaceuticals Market Share (%) by Geographic Region – North America, Europe, Asia-Pacific, South America and Rest of World



North American Biopharmaceuticals Market Analysis (2016-2025) by Product – Monoclonal Antibodies (moAb), Biotech Vaccines, Recombinant (RH) Insulin, Erythropoietin, Granulocyte Colony-Stimulating Factor (G-CSF), Interferons, Human Growth Hormones (HGH) and Other Biopharmaceuticals in USD Million



## KEY PLAYERS PROFILED

- Abbott Laboratories, Inc.
- Amgen, Inc.
- Astrazeneca Plc
- Bayer AG
- Biocon Ltd.
- Biogen Inc
- Boehringer Ingelheim GmbH
- Bristol-Myers Squibb Company
- Eli Lilly and Company
- Glaxosmithkline, Plc
- Johnson & Johnson
- Merck & Co., Inc.
- Novartis AG
- Novo Nordisk, Inc.
- Pfizer Inc
- Regeneron Pharmaceuticals, Inc.
- Roche Holding AG
- Sanofi
- Takeda Pharmaceutical Company Limited
- Teva Pharmaceutical Industries Ltd.
- UCB S.A.

.....more

## TABLE OF CONTENTS

### PART A: GLOBAL MARKET PERSPECTIVE ..... 1

|   |    |
|---|----|
| <b>1. INTRODUCTION</b> .....  | 1  |
| 1.1 Product Outline.....  | 4  |
| 1.1.1 Biopharmaceuticals .....  | 4  |
| 1.1.2 Evolution of the Biopharmaceuticals .....                         | 4  |
| 1.1.3 Biosimilars.....  | 5  |
| 1.1.4 Commercialization of Biopharmaceuticals.....                      | 6  |
| 1.1.5 Biopharmaceuticals Regulations.....                               | 6  |
| 1.1.6 Production of Biopharmaceuticals.....                             | 7  |
| 1.1.6.1 Microbial Cells .....   | 7  |
| 1.1.6.2 Mammalian Cells .....   | 7  |
| 1.1.6.3 Plant Cells .....   | 8  |
| 1.1.6.4 Transgenics .....   | 8  |
| 1.1.7 Disposable Manufacturing with Single-Use Systems.....             | 8  |
| 1.1.8 Characterization of Biopharmaceuticals .....                      | 9  |
| 1.1.8.1 Circular Dichroism (CD).....                                    | 9  |
| 1.1.8.2 Capillary Electrophoresis (CE) .....                            | 10 |
| 1.1.8.3 Nuclear Magnetic Resonance (NMR) .....                          | 10 |
| 1.1.8.4 Analytical Ultracentrifugation (AUC):.....                      | 10 |
| 1.1.8.5 Differential Scanning Calorimetry (DSC) .....                   | 10 |
| 1.1.8.6 Scattering Techniques.....                                      | 11 |
| 1.1.9 Delivery Systems for Biopharmaceuticals .....                     | 11 |
| 1.1.9.1 Parenteral .....  | 11 |
| 1.1.9.2 Pulmonary Delivery.....   | 11 |
| 1.1.9.3 Nasal Delivery .....  | 11 |
| 1.1.9.4 Transdermal administration.....                                 | 12 |
| 1.1.9.5 Oral Delivery .....   | 12 |
| 1.1.9.6 Drug Targeting to Brain.....                                    | 12 |
| 1.1.10 Categorization of Biopharmaceuticals .....                       | 13 |
| 1.1.10.1 Monoclonal Antibodies.....                                     | 13 |
| 1.1.10.1.1 Production of Monoclonal Antibodies .....                    | 13 |
| 1.1.10.1.2 Primary Applications of Monoclonal Antibodies .....          | 14 |
| 1.1.10.1.3 Therapeutic Applications of Monoclonal Antibodies .....      | 15 |
| 1.1.10.1.3.1 Cancer.....  | 16 |
| 1.1.10.1.3.2 Autoimmune Diseases .....                                  | 16 |
| 1.1.10.1.4 Therapeutic Monoclonal Antibodies Approved by the FDA.....   | 17 |
| 1.1.10.2 Erythropoietin (EPO).....                                      | 21 |
| 1.1.10.2.1 Functions of EPO.....  | 22 |
| 1.1.10.2.2 Medical Uses of EPO .....                                    | 22 |
| 1.1.10.2.3 Available Forms of EPO .....                                 | 22 |
| 1.1.10.3 Biotech Vaccines.....  | 24 |
| 1.1.10.3.1 Categories of Vaccines .....                                 | 24 |
| 1.1.10.3.2 Recombinant Vector Vaccines .....                            | 24 |
| 1.1.10.3.3 Production of Recombinant Vector Vaccines.....               | 25 |
| 1.1.10.3.4 Positives and Negatives of Recombinant Vector Vaccines ..... | 25 |
| 1.1.10.4 Recombinant Human (RH) Insulin.....                            | 25 |
| 1.1.10.4.1 Production of RH Insulin .....                               | 27 |
| 1.1.10.5 Granulocyte Colony-Stimulating Factor (G-CSF).....             | 28 |
| 1.1.10.5.1 Biological Role of G-CSF .....                               | 28 |
| 1.1.10.5.2 Therapeutic Applications of G-CSF .....                      | 28 |
| 1.1.10.5.3 Some Highlights of G-CSF.....                                | 29 |
| 1.1.10.6 Interferons (IFNs).....  | 29 |
| 1.1.10.6.1 Types of Interferons.....                                    | 30 |
| 1.1.10.6.2 Functions of Interferons .....                               | 31 |
| 1.1.10.6.3 Disease Therapy with Interferons .....                       | 32 |
| 1.1.10.6.4 Interferons and Drug Formulations.....                       | 33 |
| 1.1.10.7 Human Growth Hormones.....                                     | 34 |
| 1.1.10.7.1 The Functioning of Human Growth Hormone.....                 | 34 |

|   |           |
|---|-----------|
| 1.1.10.7.2 Clinical Importance of GH.....   | 35        |
| 1.1.10.7.2.1 Excess of GH .....   | 35        |
| 1.1.10.7.2.2 Deficiency of GH .....   | 36        |
| 1.1.10.7.3 Use of GH as a Medication .....  | 36        |
| 1.1.10.7.3.1 In Replacement Therapy .....   | 36        |
| 1.1.10.7.3.2 Additional Approved Applications .....   | 36        |
| 1.1.10.7.3.3 Off-Label Use of GH .....  | 37        |
| 1.1.10.7.3.4 Side Effects of GH Therapy.....  | 38        |
| 1.1.10.8 Other Biopharmaceuticals .....   | 38        |
| 1.1.10.8.1 Blood Factors (Factor VIII and Factor IX) .....  | 38        |
| 1.1.10.8.1.1 Factor VIII.....   | 38        |
| 1.1.10.8.1.1.1 Therapeutic Applications of Factor VIII.....   | 39        |
| 1.1.10.8.1.2 Factor IX.....   | 39        |
| 1.1.10.8.1.2.1 The Function of Factor IX in Disease .....   | 39        |
| 1.1.10.8.2 Thrombolytic Agents (Tissue Plasminogen Activator).....  | 39        |
| 1.1.10.8.2.1 Function of tPA .....  | 40        |
| 1.1.10.8.2.2 Clinical Uses of tPA .....   | 40        |
| 1.1.10.8.2.3 Recombinant Tissue Plasminogen Activators (rtPA).....  | 41        |
| 1.1.10.8.3 Interleukin-Based Products.....  | 41        |
| 1.1.10.8.3.1 Human Interleukins .....   | 42        |
| 1.1.10.8.4 Tumor Necrosis Factor .....  | 45        |
| 1.1.10.8.5 Therapeutic Enzymes.....   | 45        |
| 1.1.10.8.5.1 A Few Important Therapeutic Enzymes.....   | 46        |
| <b>2. KEY MARKET TRENDS</b> .....   | <b>47</b> |
| 2.1 Pembrolizumab Prolongs Overall Survival in Recurrent, Metastatic Head and Neck Squamous Cell Carcinoma..... | 47        |
| 2.2 Lanadelumab Effective in Reducing Swelling Attacks in Patients with Hereditary Angioedema ....              | 47        |
| 2.3 FDA and Other Federal Health Agencies to Address the Challenges in Developing New Antimicrobials .....      | 48        |
| 2.4 Isolated Human Monoclonal Antibodies that Neutralize Norovirus.....   | 49        |
| 2.5 Emerging Innovations and their Impact on Biopharma Manufacturing in the Coming Years .....                  | 49        |
| 2.6 Monoclonal Antibodies Show High Potential Against Zika Virus Infection .....                                | 50        |
| 2.7 Rapid Technological Advancements are Changing the Biopharmaceuticals Industry.....                          | 50        |
| 2.8 Portable Bioreactor Produces Biopharmaceutical Drugs on Demand at a Point of Care.....                      | 51        |
| <b>3. KEY GLOBAL PLAYERS</b> .....  | <b>52</b> |
| Abbott Laboratories, Inc. (United States).....  | 52        |
| AbbVie Inc. (United States) .....   | 52        |
| Amgen, Inc. (United States) .....   | 55        |
| Astrazeneca Plc (United Kingdom) .....  | 56        |
| Bayer AG (Germany) .....  | 60        |
| Biocon Ltd. (India) .....   | 62        |
| Biogen Inc (United States).....   | 67        |
| Boehringer Ingelheim GmbH (Germany).....  | 69        |
| Bristol-Myers Squibb Company (United States) .....  | 70        |
| Eli Lilly and Company (United States) .....   | 72        |
| Glaxosmithkline, Plc (United Kingdom).....  | 73        |
| Johnson & Johnson (United States).....  | 74        |
| Janssen Pharmaceuticals, Inc. (United States).....  | 74        |
| Merck & Co., Inc. (United States) .....   | 78        |
| Novartis AG (Switzerland) .....   | 80        |
| Novo Nordisk, Inc. (United States) .....  | 81        |
| Pfizer Inc (United States).....   | 82        |
| Regeneron Pharmaceuticals, Inc. (United States) .....   | 84        |
| Roche Holding AG (Switzerland) .....  | 86        |
| Genentech, Inc. (United States) .....   | 88        |
| Sanofi (France).....  | 92        |
| Takeda Pharmaceutical Company Limited (Japan) .....   | 94        |
| Teva Pharmaceutical Industries Ltd. (Israel).....   | 95        |
| UCB S.A. (Belgium).....   | 96        |

### 4. KEY BUSINESS AND PRODUCT TRENDS ..... 97

|  |     |
|--|-----|
| Eli Lilly Acquires Loxo Oncology to expand its Oncology Portfolio .....  | 97  |
| FDA Expands ALIMTA (Pemetrexed) Label with Combination of KEYTRUDA (Pembrolizumab) and Platinum Chemotherapy for the First-Line NSCLC Treatment..... | 97  |
| GlaxoSmithKline (GSK) Acquires TESARO, a Biopharmaceutical Company for \$5.1 Billion .....   | 97  |
| FDA Approves Adacel (Tdap) Vaccine for Repeat Vaccinations .....   | 97  |
| Sanofi to Enter into License Agreement with Biomunex to Develop Antibody Therapeutics.....   | 98  |
| AbSci and Sanofi to Enter into Manufacturing Partnership.....  | 98  |
| Takeda Completes Acquisition of Shire Plc .....  | 98  |
| 19 December 2018Biogen Collaborates With C4 Therapeutics to Develop Treatments for Neurological Conditions .....                                     | 98  |
| Abbvie to Collaborate With Tizona to Develop Antibody Immunotherapy.....   | 98  |
| Bristol-Myers Squibb to Acquire Celgene for \$74-Billion .....   | 99  |
| FDA Approved Sprycel® (Dasatinib) Tablets in Combination with Chemotherapy in Certain Pediatric Patients .....                                       | 99  |
| Novartis to Acquire Encocyte, a US-based biopharmaceutical company for \$2.1 Billion .....   | 99  |
| Abbvie Submits NDA to FDA and MAA to EMA for Upadacitinib .....  | 100 |
| GSK and Pfizer to Merge Consumer Healthcare Businesses to Form a Joint Venture.....  | 100 |
| Lilly Signs Research Collaboration and License Agreement with Aduro Biotech.....   | 100 |
| Lilly to Acquire Hydra's Pre-Clinical Pain Program TRPA1.....  | 100 |
| Roche Subsidiary Genentech to Acquire NASH-Focused Jecure Therapeutics .....   | 101 |
| Pfizer Gains Global Patent License for AbbVie's HUMIRA® (Adalimumab).....  | 101 |
| Amgen and Provention Bio Enters Into Co-Development Agreement .....  | 101 |
| Astrazeneca to Sell Synagis US Rights to Sobi for \$1.5 Billion .....  | 102 |
| Lilly Partners with NextCure to Develop Immuno-Oncology Medicines.....   | 102 |
| AstraZeneca's MedImmune Expands Innate Pharma Oncology Collaboration .....   | 102 |
| Abbvie Teams Up With Morphic Therapeutic For Fibrotic Disease Treatments .....   | 102 |
| Roche to Acquire Immuno-Oncology Company Tusk Therapeutics.....  | 103 |
| Janssen Partners With Arrowhead to Treat Hepatitis B .....   | 103 |
| Merck to collaborate with Dragonfly Therapeutics on Solid-Tumor Immunotherapies.....   | 103 |
| Sanofi to Enter Research Collaboration with Dyadic.....  | 103 |
| Pfizer Teams Up With BioNTech to Develop mRNA -Based Flu Vaccines for Prevention of Influenza .....  | 104 |
| Amgen to Build Next-Generation Biomanufacturing Plant Rhode Island.....  | 104 |
| Takeda Pharmaceutical to Acquire TiGenix, a Biopharmaceutical Company .....  | 104 |
| GSK Signs R&D Partnership with 23andme .....   | 104 |
| Novartis Inks \$1.1 Billion Monoclonal Antibody Deal With MorphoSys and Galapagos .....  | 105 |
| Novartis Partners With CELLforCURE to Manufacture CAR-T Therapies .....  | 105 |
| Abbvie and Calico Collaborated to Develop T-Cell Therapies for Cancer .....  | 105 |
| Sanofi to Partner with Translate Bio \$850 Million mRNA Vaccine Development Deal.....  | 106 |
| Sanofi to Acquire Aplynx in \$4.8 Billion Deal .....   | 106 |
| Alexion Teams Up With Complement to Treat Neurodegenerative Disorders .....  | 106 |
| WuXi Biologics to Invest \$60 Million in US Plant.....   | 106 |
| FDA Approval for Samsung Biologics's mab Drug Substance Manufacturing Plant.....   | 107 |
| Novartis to Acquire AveXis, Gene-Therapy Biotech Company for \$8.7 Billion .....   | 107 |
| Lilly to Buy ARMO Biosciences.....   | 107 |



|  |            |  |            |   |            |
|--|------------|--|------------|---|------------|
| Janssen Biotech to Acquire BeneVir Biopharm .....  | 107        | 7.2.1.7 Human Growth Hormones (HGH) .....  | 167        | 8.2.1.7 Human Growth Hormones (HGH) .....   | 251        |
| Merck to Expand mRNA Cancer Vaccines Collaboration with Moderna .....                                    | 108        | 7.2.1.8 Other Biopharmaceuticals .....   | 169        | 8.2.1.8 Other Biopharmaceuticals .....  | 253        |
| Janssen to Collaborate With Bristol-Myers Squibb to Develop Factor Xla (FXla) Inhibitors .....           | 108        | 7.3 North American Biopharmaceuticals Market Overview by Application .....         | 171        | 8.3 European Biopharmaceuticals Market Overview by Application .....                  | 255        |
| Alexion to Buy Sweden-Based Wilson Therapeutics .....  | 108        | 7.3.1 Biopharmaceuticals Application Market Overview by NA Region .....            | 173        | 8.3.1 Biopharmaceuticals Application Market Overview by EU Region .....               | 257        |
| Lilly to Partner with Sigilon to Develop Encapsulated Cell Therapies .....                               | 108        | 7.3.1.1 Oncology .....   | 173        | 8.3.1.1 Oncology .....  | 257        |
| Boehringer Ingelheim Inks \$1.7 Billion Immuno-Oncology Deal With OSE Immunotherapeutics .....           | 109        | 7.3.1.2 Autoimmune Disorders .....   | 175        | 8.3.1.2 Autoimmune Disorders .....  | 259        |
| Pfizer to Enter Asset Contribution Agreement with Allogene Therapeutics .....                            | 109        | 7.3.1.3 Diabetes .....   | 177        | 8.3.1.3 Diabetes .....  | 261        |
| Sanofi to Acquire Biogen's Bioverativ, a Hemophilia-focused company .....                                | 109        | 7.3.1.4 Inflammatory and Infectious Diseases .....                                 | 179        | 8.3.1.4 Inflammatory and Infectious Diseases .....                                    | 263        |
| AstraZeneca's MedImmune to Spins off Biotech Company Focused on Autoimmune Diseases .....                | 109        | 7.3.1.5 Neurological Diseases .....  | 181        | 8.3.1.5 Neurological Diseases .....   | 265        |
| Abbvie to Sign Strategic Collaboration with Alector Partner on Alzheimer's Disease Immunotherapies ..... | 110        | 7.3.1.6 Cardiovascular Diseases .....  | 183        | 8.3.1.6 Cardiovascular Diseases .....   | 267        |
| Lilly and CureVac Inks \$1.8 Billion Deal to Develop mRNA Cancer Vaccines .....                          | 110        | 7.3.1.7 Other Applications .....   | 185        | 8.3.1.7 Other Applications .....  | 269        |
| J&J Terminates Two Drugs Sirukumab and Talacotuzumab from Pipeline .....                                 | 110        | 7.4 Major Market Players .....   | 187        | 8.4 Major Market Players .....  | 271        |
| J&J's Stelara Received FDA Approval for Expanded Indication .....  | 110        | Abbott Laboratories, Inc. (United States) .....                                    | 187        | 3P Biopharmaceuticals S.L. (Spain) .....  | 271        |
| AbbVie and BMS Partners on clinical research collaboration .....   | 111        | AbbVie Inc. (United States) .....  | 187        | Applikon Biotechnology B.V. (The Netherlands) .....                                   | 271        |
| J&J to Enter R&D Partnership with Health and Human Services (HHS) .....                                  | 111        | Alder Biopharmaceuticals Inc. (United States) .....                                | 190        | Albumedix Ltd. (United Kingdom) .....   | 272        |
| <b>5. RECENT BIOPHARMACEUTICALS APPROVALS ..</b>   | <b>112</b> | Alexion Pharmaceuticals, Inc (United States) .....                                 | 191        | Astrazeneca Plc (United Kingdom) .....  | 273        |
| <b>6. GLOBAL MARKET OVERVIEW .....</b>   | <b>114</b> | Amgen, Inc. (United States) .....  | 192        | Bayer AG (Germany) .....  | 276        |
| 6.1 Global Biopharmaceuticals Market Overview by Product Type .....                                      | 115        | Analytical Biological Services Inc (United States) .....                           | 193        | Boehringer Ingelheim GmbH (Germany) .....   | 278        |
| 6.1.1 Global Biopharmaceuticals Product Market Overview by Geographic Region .....                       | 117        | Array Biopharma Inc. (United States) .....   | 194        | Cellgenix GmbH (Germany) .....  | 279        |
| 6.1.1.1 Monoclonal Antibodies (moAb) .....   | 117        | Atlanta Biologicals, Inc (United States) .....                                     | 195        | Evotec AG (Germany) .....   | 280        |
| 6.1.1.2 Biotech Vaccines .....   | 119        | Biogen Inc (United States) .....   | 196        | Glaxosmithkline, Plc (United Kingdom) .....   | 281        |
| 6.1.1.3 Recombinant Human (RH) Insulin .....   | 121        | Bristol-Myers Squibb Company (United States) .....                                 | 198        | Novartis AG (Switzerland) .....   | 282        |
| 6.1.1.4 Erythropoietin .....   | 123        | Charles River Laboratories International, Inc. (US) .....                          | 200        | Roche Holding AG (Switzerland) .....  | 283        |
| 6.1.1.5 Granulocyte Colony-Stimulating Factor (G-CSF) .....  | 125        | Eli Lilly and Company (United States) .....  | 201        | Sanofi (France) .....   | 286        |
| 6.1.1.6 Interferons .....  | 127        | Fujifilm Diosynth Biotechnologies USA Inc (US) .....                               | 202        | UCB S.A. (Belgium) .....  | 288        |
| 6.1.1.7 Human Growth Hormones (HGH) .....  | 129        | Genentech, Inc. (United States) .....  | 203        |   |            |
| 6.1.1.8 Other Biopharmaceuticals .....   | 131        | Johnson & Johnson (United States) .....  | 207        | 8.5 Country-wise Analysis of European Biopharmaceuticals Market .....                 | 289        |
| 6.2 Global Biopharmaceuticals Market Overview by Application .....                                       | 133        | Janssen Pharmaceuticals, Inc. (United States) .....                                | 207        | <b>8.5.1 Germany .....</b>  | <b>289</b> |
| 6.2.1 Global Biopharmaceuticals Application Market Overview by Geographic Region .....                   | 135        | Merck & Co., Inc. (United States) .....  | 211        | 8.5.1.1 German Biopharmaceuticals Market Overview by Product Type .....               | 289        |
| 6.2.1.1 Oncology .....   | 135        | Millennium Pharmaceuticals, Inc. (United States) .....                             | 213        | 8.5.1.2 German Biopharmaceuticals Market Overview by Application .....                | 291        |
| 6.2.1.2 Autoimmune Disorders .....   | 137        | Novo Nordisk, Inc. (United States) .....   | 214        | <b>8.5.2 France .....</b>   | <b>293</b> |
| 6.2.1.3 Diabetes .....   | 139        | Pfizer Inc (United States) .....   | 215        | 8.5.2.1 French Biopharmaceuticals Market Overview by Product Type .....               | 293        |
| 6.2.1.4 Inflammatory and Infectious Diseases .....   | 141        | Regeneron Pharmaceuticals, Inc. (United States) .....                              | 217        | 8.5.2.2 French Biopharmaceuticals Market Overview by Application .....                | 295        |
| 6.2.1.5 Neurological Diseases .....  | 143        | Sanofi-Aventis U.S. LLC (United States) .....                                      | 219        | <b>8.5.3 The United Kingdom .....</b>   | <b>297</b> |
| 6.2.1.6 Cardiovascular Diseases .....  | 145        | Seattle Genetics, Inc (United States) .....  | 220        | 8.5.3.1 United Kingdom Biopharmaceuticals Market Overview by Product Type .....       | 297        |
| 6.2.1.7 Other Applications .....   | 147        | Soligenix, Inc. (United States) .....  | 221        | 8.5.3.2 United Kingdom Biopharmaceuticals Market Overview by Application .....        | 299        |
| <b>PART B: REGIONAL MARKET PERSPECTIVE ..</b>  | <b>149</b> | Sunovion Pharmaceuticals Inc. (United States) .....                                | 222        | <b>8.5.4 Italy .....</b>  | <b>301</b> |
| <b>REGIONAL MARKET OVERVIEW .....</b>  | <b>151</b> | <b>7.5 Country-wise Analysis of North American Biopharmaceuticals Market .....</b> | <b>223</b> | 8.5.4.1 Italy Biopharmaceuticals Market Overview by Product Type .....                | 301        |
| <b>7. NORTH AMERICA .....</b>  | <b>151</b> | <b>7.5.1 The United States .....</b>   | <b>223</b> | 8.5.4.2 Italy Biopharmaceuticals Market Overview by Application .....                 | 303        |
| 7.1 North American Biopharmaceuticals Market Overview by Geographic Region .....                         | 151        | 7.5.1.1 United States Biopharmaceuticals Market Overview by Product Type .....     | 223        | <b>8.5.5 Spain .....</b>  | <b>305</b> |
| 7.2 North American Biopharmaceuticals Market Overview by Product Type .....                              | 153        | 7.5.1.2 United States Biopharmaceuticals Market Overview by Application .....      | 225        | 8.5.5.1 Spanish Biopharmaceuticals Market Overview by Product Type .....              | 305        |
| 7.2.1 Biopharmaceuticals Product Segment Market Overview by NA Region .....                              | 155        | <b>7.5.2 Canada .....</b>  | <b>227</b> | 8.5.5.2 Spanish Biopharmaceuticals Market Overview by Application .....               | 307        |
| 7.2.1.1 Monoclonal Antibodies (moAb) .....   | 155        | 7.5.2.1 Canadian Biopharmaceuticals Market Overview by Product Type .....          | 227        | <b>8.5.6 Rest of Europe .....</b>   | <b>309</b> |
| 7.2.1.2 Biotech Vaccines .....   | 157        | 7.5.2.2 Canadian Biopharmaceuticals Market Overview by Application .....           | 229        | 8.5.6.1 Rest of Europe Biopharmaceuticals Market Overview by Product Type .....       | 309        |
| 7.2.1.3 Recombinant Human (RH) Insulin .....   | 159        | <b>7.5.3 Mexico .....</b>  | <b>231</b> | 8.5.6.2 Rest of Europe Biopharmaceuticals Market Overview by Application .....        | 311        |
| 7.2.1.4 Erythropoietin .....   | 161        | 7.5.3.1 Mexican Biopharmaceuticals Market Overview by Product Type .....           | 231        | <b>9. ASIA-PACIFIC .....</b>  | <b>313</b> |
| 7.2.1.5 Granulocyte Colony-Stimulating Factor (G-CSF) .....  | 163        | 7.5.3.2 Mexican Biopharmaceuticals Market Overview by Application .....            | 233        | 9.1 Asia-Pacific Biopharmaceuticals Market Overview by Geographic Region .....        | 313        |
| 7.2.1.6 Interferons .....  | 165        | <b>8. EUROPE .....</b>   | <b>235</b> | 9.2 Asia-Pacific Biopharmaceuticals Market Overview by Product Type .....             | 315        |
|  |            | 8.1 European Biopharmaceuticals Market Overview by Geographic Region .....         | 235        | 9.2.1 Biopharmaceuticals Product Segment Market Overview by Asia-Pacific Region ..... | 317        |
|  |            | 8.2 European Biopharmaceuticals Market Overview by Product Type .....              | 237        | 9.2.1.1 Monoclonal Antibodies (moAb) .....  | 317        |
|  |            | 8.2.1 Biopharmaceuticals Product Segment Market Overview by EU Region .....        | 239        | 9.2.1.2 Biotech Vaccines .....  | 319        |
|  |            | 8.2.1.1 Monoclonal Antibodies (moAb) .....   | 239        |   |            |
|  |            | 8.2.1.2 Biotech Vaccines .....   | 241        |   |            |
|  |            | 8.2.1.3 Recombinant Human (RH) Insulin .....                                       | 243        |   |            |
|  |            | 8.2.1.4 Erythropoietin .....   | 245        |   |            |
|  |            | 8.2.1.5 Granulocyte Colony-Stimulating Factor (G-CSF) .....                        | 247        |   |            |
|  |            | 8.2.1.6 Interferons .....  | 249        |   |            |

|  |     |  |            |  |            |
|--|-----|--|------------|--|------------|
| 9.2.1.3 Recombinant Human (RH) Insulin .....   | 321 | <b>9.5.2 China</b> .....   | <b>374</b> | 10.3.1.2 Autoimmune Disorders.....   | 414        |
| 9.2.1.4 Erythropoietin.....  | 323 | 9.5.2.1 Chinese Biopharmaceuticals Market Overview<br>by Product Type.....               | 374        | 10.3.1.3 Diabetes.....   | 416        |
| 9.2.1.5 Granulocyte Colony-Stimulating Factor<br>(G-CSF) .....                       | 325 | 9.5.2.2 Chinese Biopharmaceuticals Market Overview<br>by Application .....               | 376        | 10.3.1.4 Inflammatory and Infectious Diseases .....  | 418        |
| 9.2.1.6 Interferons .....  | 327 | <b>9.5.3 India</b> .....   | <b>378</b> | 10.3.1.5 Neurological Diseases .....   | 420        |
| 9.2.1.7 Human Growth Hormones (HGH) .....  | 329 | 9.5.3.1 Indian Biopharmaceuticals Market Overview<br>by Product Type.....                | 378        | 10.3.1.6 Cardiovascular Diseases.....  | 422        |
| 9.2.1.8 Other Biopharmaceuticals .....   | 331 | 9.5.3.2 Indian Biopharmaceuticals Market Overview<br>by Application .....                | 380        | 10.3.1.7 Other Applications .....  | 424        |
| 9.3 Asia-Pacific Biopharmaceuticals Market Overview<br>by Application.....           | 333 | <b>9.5.4 South Korea</b> .....   | <b>382</b> | 10.4 Country-wise Analysis of South American<br>Biopharmaceuticals Market.....             | 426        |
| 9.3.1 Biopharmaceuticals Application Market<br>Overview by Asia-Pacific Region ..... | 335 | 9.5.4.1 South Korean Biopharmaceuticals Market<br>Overview by Product Type.....          | 382        | <b>10.4.1 Brazil</b> .....   | <b>426</b> |
| 9.3.1.1 Oncology.....  | 335 | 9.5.4.2 South Korean Biopharmaceuticals Market<br>Overview by Application.....           | 384        | 10.4.1.1 Brazilian Biopharmaceuticals Market<br>Overview by Product Type.....              | 426        |
| 9.3.1.2 Autoimmune Disorders.....  | 337 | <b>9.5.5 Rest of Asia-Pacific</b> .....  | <b>386</b> | 10.4.1.2 Brazilian Biopharmaceuticals Market<br>Overview by Application.....               | 428        |
| 9.3.1.3 Diabetes.....  | 339 | 9.5.5.1 Rest of Asia-Pacific Biopharmaceuticals<br>Market Overview by Product Type ..... | 386        | <b>10.4.2 Argentina</b> .....  | <b>430</b> |
| 9.3.1.4 Inflammatory and Infectious Diseases .....                                   | 341 | 9.5.5.2 Rest of Asia-Pacific Biopharmaceuticals<br>Market Overview by Application .....  | 388        | 10.4.2.1 Argentinean Biopharmaceuticals Market<br>Overview by Product Type.....            | 430        |
| 9.3.1.5 Neurological Diseases.....   | 343 | <b>10. SOUTH AMERICA</b> .....   | <b>390</b> | 10.4.2.2 Argentinean Biopharmaceuticals Market<br>Overview by Application.....             | 432        |
| 9.3.1.6 Cardiovascular Diseases.....   | 345 | 10.1 South American Biopharmaceuticals Market<br>Overview by Geographic Region.....      | 390        | <b>10.4.3 Rest of South America</b> .....  | <b>434</b> |
| 9.3.1.7 Other Biopharmaceutical Applications .....                                   | 347 | 10.2 South American Biopharmaceuticals Market<br>Overview by Product Type.....           | 392        | 10.4.3.1 Rest of South America Biopharmaceuticals<br>Market Overview by Product Type ..... | 434        |
| 9.4 Major Market Players .....   | 349 | 10.2.1 Biopharmaceuticals Product Segment Market<br>Overview by SA Region .....          | 394        | 10.4.3.2 Rest of South America Biopharmaceuticals<br>Market Overview by Application .....  | 436        |
| Beijing SL Pharmaceutical Co Ltd (China).....  | 349 | 10.2.1.1 Monoclonal Antibodies (moAb) .....  | 394        | <b>11. REST OF WORLD</b> .....   | <b>438</b> |
| Beijing Tiantan Biological Products Co Ltd (China).....                              | 351 | 10.2.1.2 Biotech Vaccines .....  | 396        | 11.1 Rest of World Biopharmaceuticals Market<br>Overview by Product Type.....              | 438        |
| Biocon Ltd. (India) .....  | 352 | 10.2.1.3 Recombinant Human (RH) Insulin .....  | 398        | 11.2 Rest of World Biopharmaceuticals Market<br>Overview by Application.....               | 440        |
| Biological E Limited (India) .....   | 357 | 10.2.1.4 Erythropoietin.....   | 400        | 11.3 Major Market Players .....  | 442        |
| Cadila Healthcare Limited (Zydus Cadila) (India).....                                | 358 | 10.2.1.5 Granulocyte Colony-Stimulating Factor<br>(G-CSF) .....                          | 402        | Teva Pharmaceutical Industries Ltd. (Israel) .....   | 442        |
| Celltrion, Inc. (South Korea).....   | 360 | 10.2.1.6 Interferons.....  | 404        | UNV Medicine Ltd. (Israel).....  | 443        |
| Glenmark Pharmaceuticals Limited (India).....  | 360 | 10.2.1.7 Human Growth Hormones (HGH) .....   | 406        | <b>PART C: GUIDE TO THE INDUSTRY</b> .....   | <b>444</b> |
| GVK Biosciences Pvt Ltd (India) .....  | 361 | 10.2.1.8 Other Biopharmaceuticals .....  | 408        | <b>1. NORTH AMERICA</b> .....  | <b>444</b> |
| Hualan Biological Engineering Inc (China).....                                       | 362 | 10.3 South American Biopharmaceuticals Market<br>Overview by Application.....            | 410        | <b>2. EUROPE</b> .....   | <b>463</b> |
| Reliance Life Sciences Pvt Ltd (India) .....   | 363 | 10.3.1 Biopharmaceuticals Application Market<br>Overview by SA Region .....              | 412        | <b>3. ASIA-PACIFIC</b> .....   | <b>471</b> |
| RPG Life Sciences Limited (India).....   | 364 | 10.3.1.1 Oncology.....   | 412        | <b>4. REST OF WORLD</b> .....  | <b>478</b> |
| Samsung Biologics Co Ltd (South Korea).....  | 364 | <b>9.5.1 Japan</b> .....   | <b>370</b> | <b>PART D: ANNEXURE</b> .....  | <b>479</b> |
| Shanghai Institute of Biological Products (China) .....                              | 365 | 9.5.1.1 Japanese Biopharmaceuticals Market<br>Overview by Product Type.....              | 370        | <b>1. RESEARCH METHODOLOGY</b> .....   | <b>479</b> |
| Shantha Biotechnics Ltd (India) .....  | 366 | 9.5.1.2 Japanese Biopharmaceuticals Market<br>Overview by Application.....               | 372        | <b>2. FEEDBACK</b> .....   | <b>481</b> |
| Sun Pharmaceutical Industries Ltd (India) .....                                      | 367 |  |            |  |            |
| Suven Life Sciences Ltd (India).....   | 367 |  |            |  |            |
| Takeda Pharmaceutical Company Limited (Japan).....                                   | 368 |  |            |  |            |
| Torrent Pharmaceuticals Limited (India).....   | 369 |  |            |  |            |

## About Industry Experts

Industry Experts' market research, backed by years of experience and an analytical team dedicated to providing the most optimal business solutions, has been specifically designed to provide a variety of benefits, both current and future. Our leading-edge publications make the life easy for corporate strategists, investors, analysts and researchers, startups, consultants, financial and banking executives, academicians and many more. The company also provides customized research reports to cater the needs of the industry.

Business intelligence provides the critical link between comprehending prevailing market conditions and devising strategies to maximize parameters, such as revenues, profits and return on investment in order to gain market share. The significance of market research can be largely understood through the range of factors that impact businesses. These can comprise market size (current and projected), geographic market reach and demand and supply scenario, to name a few. Our ongoing quest to collect up to date and accurate information by conducting online surveys, personal interviews, taking the opinions of senior level executives will enable us to serve our clients better in every possible aspect.

[More about Industry Experts](#)



**Industry Experts, Inc.**  
14726 Ramona Ave, Suite S2  
Chino, CA 91710  
Greater Los Angeles  
United States  
Phone: +1-320-iXPERTS (497-3787)  
  
Email: [info@industry-experts.com](mailto:info@industry-experts.com)

**India Office**  
1-7-19/C, Street No. 8, Habsiguda  
Hyderabad – 500007  
India  
Phone: +91-40-4018-1314  
Fax: +91-40-2715-7746  
  
Website: <http://industry-experts.com>