

# **Advanced and Targeted Drug Delivery Market Segmentation, Analysis & Forecast to 2021 Nanoparticles, Polymers, Liposomes, Micelles, Nanoemulsions, Dendrimers, Monoclonal Antibodies by Geography, Therapeutic Area and Stakeholder Environment**

<https://marketpublishers.com/r/AD035579CE0EN.html>

Date: April 2016

Pages: 382

Price: US\$ 3,800.00 (Single User License)

ID: AD035579CE0EN

## **Abstracts**

Advanced and Targeted Drug Delivery Market Segmentation, Analysis & Forecast to 2021 Nanoparticles, Polymers, Liposomes, Micelles, Nanoemulsions, Dendrimers, Monoclonal Antibodies by Geography, Therapeutic Area and Stakeholder Environment

This newly published report is a global industry analysis on the advanced and targeted drug delivery market that KellySciPub forecasts to grow at a 10.4% CAGR to \$319 billion by 2021 from \$168 billion today. Supported by over 300 tables and figures, this 382 page report is an extensive industry analysis specifically written for C-Suite, VP and Higher executives within the Pharma and Biotech space.

The advanced and targeted drug delivery market is segmented and analysed through to 2021 with corresponding CAGR breakdown by:

Technology (Nanoparticles, Polymers (micelles, dendrimers etc), Monoclonal antibodies, Gold nanoparticles-based drug delivery and imaging, Drug eluting stents)

Geography (Global, USA, Europe, RoW)

Therapeutic Area (Pulmonary, Ocular drug delivery, Ocular nano-based drug

delivery implants, Drug Eluting Stents,

### Sub-Market Analysis (details below)

The monoclonal antibody market is further broken down and presented as the top selling mAbs by company, class and revenue through to 2021 with corresponding CAGR values. Specific figures are given in relation to Humira, Remicade, Avastin, Rituxan, Soliris, Herceptin, Kadcylla, Perjeta, Lucentis, Xgeva/Prolia, Stelara and Tysarbi.

The global market for nano-based targeted drug delivery is presented by the following sub-markets liposomes, polymers (micelles, dendrimers etc) and gold nano-particles through to 2021 with corresponding CAGR figures.

The global pulmonary drug delivery market is analysed and presented as metered dose inhalers (MDIs), dry powder inhalers (DPIs) and nebulizers through 2021 with corresponding CAGR data. This market is also divided into the following geographical regions USA, Europe, RoW, Global through 2021 with corresponding CAGR analysis.

Our PhD analysts identify breakthrough R&D papers and patents and delve into disruptive technical platforms that is revolutionising drug delivery systems. Business, financial and market analysis is performed on all data collated to yield robust figures and forecast through 2021 with CAGR values. Together, our scientific and business team provides you with their in depth knowledge, experience and perspective on the targeted drug delivery landscape. Stake holder analysis of key players including innovators, developers and commercial partners is performed and an in depth chapter of 170 companies involved is presented. The analysis includes details of how is breakthrough technology adoption is changing the drug delivery landscape and also how emerging products like hydrogels, PEGylated phospholipid nanocarriers and cyclodextrins are disrupting conventional markets.

### Key Questions Answered in this Report:

What are the maximum drug release times reported for various nano-based drug carriers?

What regulatory agencies are approving specific nanomedicines?

How many liposome-based drugs are available in the market?

How many stealth liposomes have been granted market approval?

How many PEGylated liposomes are used for targeted drug delivery?

Who are the leading players in liposome-based drug formulation?

What are stimuli-responsive polymers?

Who are the market leaders in polymer-based drugs?

What dendrimer-based drugs are the commercially available for targeted delivery?

What are the applications of inorganic nanoparticles in targeted drug deliver?

Which companies are focusing on inorganic nanoparticles for targeted drug delivery?

What are the applications of magnetic nanoparticles in drug delivery, diagnostic and imaging?

What is the global market value of nanomedicines?

What is the global market for nanomedicines by therapeutic areas?

What is the global market for monoclonal antibodies by geography?

What are the best-selling mAbs?

What is the global market for major targeted delivery systems?

## Contents

### **1.0 INTRODUCTION**

- 1.1 Executive Summary
- 1.2 About this Report
- 1.3 Key Questions Answered in this Report

### **2.0 TARGETED DRUG DELIVERY: AN OVERVIEW**

- 2.1 The Need for Targeted Delivery
- 2.2 Advantages and Disadvantages of Targeted Drug Delivery
- 2.3 Types of Drug Targeting
  - 2.3.1 Active Targeting
  - 2.3.2 Passive Targeting
    - 2.3.2.1 Passively Targeted Therapeutic Preparations
    - 2.3.2.2 Polymeric Nanoparticles (NPs) Developed for Passive Delivery of Drugs
- 2.4 Ideal Characteristics of Targeted Drug Delivery Carriers
- 2.5 Drug Carriers used in Targeting Systems

### **3.0 TARGETED DRUG DELIVERY AND NANOMEDICINES: AN OVERVIEW**

- 3.1 Ideal Characteristics of Nanoparticles suited for Targeted Delivery
- 3.2 Size of Therapeutic Nanoconstructs
- 3.3 Examples of Nanomedicines Approved by One or More Regulatory Bodies
  - 3.3.1 Brief Description of Approved Nanomedicines
    - 3.3.1.1 Doxil
    - 3.3.1.2 Myocet
    - 3.3.1.3 DaunoXome
    - 3.3.1.4 ThermoDox
    - 3.3.1.5 Abraxane
    - 3.3.1.6 Rexin-G
    - 3.3.1.7 Oncaspar
    - 3.3.1.8 Resovist
    - 3.3.1.9 Feridex
    - 3.3.1.10 Marquibo
    - 3.3.1.11 Brentuximab Vedotin (Adectris)
    - 3.3.1.12 Trastuzumab Emtansine (Kadcyla)
  - 3.3.2 Therapeutic Nanomedicines in Clinical Trials

- 3.4 Targeting Approaches of Nanomedicines
  - 3.4.1 Targets of Nanomedicines in the Body
  - 3.4.2 Targeting Ligands
- 3.5 Mechanism of Internalization of Nanomedicine
- 3.6 Future Direction of Nanomedicines
- 3.7 Examples of Nanomedicine Applications
- 3.8 Rationale for Nanomedicine Approach
- 3.9 Commercially Available Oral Nanotherapeutics
- 3.10 Commercially Available Nanotherapeutics for Parenteral Administration
- 3.11 Examples of FDA-Approved Nanomedicines for Intravenous Route of Administration
- 3.12 Examples of FDA-Approved Nanomedicines for Pulmonary Route of Administration
- 3.13 Examples of FDA-Approved Nanomedicines for Subcutaneous, Intramuscular, Transdermal and Ocular Route of Administration
- 3.14 Examples of Nano-Based Medical Devices and Diagnostics
- 3.15 Various Types of Nanocarriers Exploited in Formulating Nanomedicines
  - 3.15.1 Types of Nanoparticles
- 3.16 Use of Nanoparticles in Different Fields of Medicine
  - 3.16.1 Nanosystems for Cancer Treatment
  - 3.16.2 Use of Nanosystems in Tissue Engineering
  - 3.16.3 Use of Nanoparticles (NPs) in Stem Cell Therapy
  - 3.16.4 Use of Nanoparticles in Contrast Agents
- 3.17 Segmentation of Targeted Drug Delivery Nanosystems

## **4.0 LIPID-BASED TARGETED DRUG DELIVERY NANOSYSTEMS**

- 4.1 Advantages and Disadvantages of Liposomes as Targeted Drug Delivery Systems
- 4.2 Classification of Liposomes on the Basis of Size and Composition
  - 4.2.1 Classification of Liposomes on the Basis of Method of Preparation
- 4.3 Size of Liposomes
- 4.4 New Generation of Liposomes and their Features
- 4.5 Conventional Liposomes
  - 4.5.1 Benefits of Drug Loads in Liposomes
  - 4.5.2 Loading Liposomes with Drugs
  - 4.5.3 Intracellular Delivery of Drugs by Liposomes
  - 4.5.4 Liposome-Based Drugs in the Market
  - 4.5.5 Liposome-Based Drugs for Cancer Therapy
  - 4.5.6 Liposomal Drugs in Clinical Trial
- 4.6 Modified Liposomes

- 4.6.1 Stealth Liposomes
  - 4.6.1.1 Approved Stealth Liposomes
- 4.7 Targeted Liposomes
  - 4.7.1 Stimuli-Sensitive Targeted Liposomes
  - 4.7.2 Targeted Liposomal Drugs for Cancer
- 4.8 Technology Developments in Lipid-Based Carriers
- 4.9 Key Players Focusing on Lipid-Based Carriers

## **5.0 POLYMER-BASED CARRIERS FOR TARGETED DRUG DELIVERY**

- 5.1 Stimuli-Responsive or Smart Polymers
  - 5.1.1 Temperature-Responsive Polymers
    - 5.1.1.1 Classification of Thermosensitive Polymers
  - 5.1.2 PH-Sensitive Polymers
  - 5.1.3 Bioresponsive Polymers
  - 5.1.4 Field-Responsive Polymers
- 5.2 Polymer-Based Topical Delivery Systems for Dermatological Diseases
  - 5.2.1 Natural Polymer-Based Topical Delivery Systems
  - 5.2.2 Topical Delivery Systems Based on Synthetic Polymeric Particles
- 5.3 Clinical Status of Polymeric Nanoparticles in Cancer Treatment
- 5.4 Polymeric Nanoparticle-Based Therapeutics in Clinical Trials
- 5.5 Key Players Focusing on Polymer-Based Carriers

## **6.0 POLYMERIC MICELLE/CO-POLYMERS FOR TARGETED DRUG DELIVERY**

- 6.1 Substances used to produce Micelle and their Drug Release Duration
- 6.2 Existing Approaches to Achieve Sustained Release from Micelle
  - 6.2.1 Stimuli-Responsive Micelles
- 6.3 Passive Targeting of Polymeric Micelle
- 6.4 Active Targeting of Polymeric Micelle
- 6.5 Stimuli-Responsive Polymeric Micelles
- 6.6 Multifunctional Polymeric Micelles
  - 6.6.1 Examples of Multifunctional Drug-Loaded Micelle
  - 6.6.2 Multifunctional Micelles for the Delivery of siRNA
- 6.7 Drug-Loaded Polymeric Micelle-Based Products in Development

## **7.0 DENDRIMER-BASED TARGETED DRUG DELIVERY**

- 7.1 Three-Dimensional Structure of Dendrimers

- 7.2 Dendrions as Multifunctional Nanoplatfoms
- 7.3 Commercially Available and Late-Stage Dendrimers
- 7.4 Therapeutic Moieties studied using Dendrimer Platform
- 7.5 Thermosensitive Dendrimers

## **8.0 INORGANIC NANOPARTICLES FOR TARGETED DRUG DELIVERY**

- 8.1 Companies Focusing on Inorganic Nanoparticles
- 8.2 Carbon-Based Nanoparticles for Drug Delivery
  - 8.2.1 Carbon Nanotubes (CNTs)
    - 8.2.1.1 Structure of Carbon Nanotubes
    - 8.2.1.2 Artificial Implants from Carbon Nanotubes (CNTs)
    - 8.2.1.3 Detection of Cancer Biomarker by Carbon Nanotubes
    - 8.2.1.4 Drug and Gene Delivery by Carbon Nanotubes
- 8.3 Fullerenes
  - 8.3.1 Structure of Fullerene
  - 8.3.2 Biomedical Applications of Fullerenes
- 8.4 Graphine Oxide (GO) as Nanocarriers
  - 8.4.1 GO for Drug Delivery
- 8.5 Gold-Based Nanoparticles (AuNPs)
  - 8.5.1 Shapes of Gold Nanoparticles
  - 8.5.2 Imaging Applications of Gold Nanoparticles
  - 8.5.3 Drug Delivery Applications of Gold Nanoparticles
  - 8.5.4 Diagnostic Applications of Gold Nanoparticles
- 8.6 Silica Nanoparticles for Drug Delivery
  - 8.6.1 Types of Silica Nanoparticles
  - 8.6.2 The Process of Synthesis of SNs
  - 8.6.3 Drugs Delivered through Silica Nanoparticles
- 8.7 Magnetic Particles for Drug Delivery
  - 8.7.1 Companies Focusing on Magnetic Particles
  - 8.7.2 Typical Design of a Magnetic Nanoparticle
  - 8.7.3 Use of Magnetic Nanoparticles
  - 8.7.4 Diagnostic Use
  - 8.7.5 Coating Materials for Magnetic Nanoparticles
  - 8.7.6 Organic Linkers in Magnetic Nanoparticles
  - 8.7.7 Targeted Magnetic Nanoparticles (MNPs) as Cancer Theranostics
  - 8.7.8 Targeting Magnetic Nanoparticles to Tumors (Passive and Active)
  - 8.7.9 Magnetic Nanoparticles as Diagnostics
  - 8.7.10 Magnetic Nanoparticles as Multimodal Imaging Agents

#### 8.7.11 FDA/EMA Approved Magnetic Nanoparticle-Based Contrast Agents

### **9.0 CELL-BASED SYSTEMS FOR TARGETED DELIVERY**

#### 9.1 Companies Focusing on Cell-Based Carriers

#### 9.2 Role of Dendritic Cells (DCs) in Drug Delivery

#### 9.3 Engineered RBCs for Drug Delivery

##### 9.3.1 Therapeutic Sites and Targets Accessible for RBC-Delivered Drugs

##### 9.3.2 Examples of Therapeutic Enzymes Encapsulated in Carrier RBCs

#### 9.4 Stem Cells for Drug Delivery

#### 9.5 Bacterial Ghosts for Drug Delivery

### **10.0 NUCLEIC ACID/PEPTIDE AS DRUG CARRIERS**

#### 10.1 Companies Focusing on Aptamers/Nucleic Acids/Peptides

#### 10.2 Peptide Conjugates for Drug Delivery

##### 10.2.1 Peptides as Radionuclide Carriers

##### 10.2.3 Peptide Hormones

##### 10.2.4 Peptide Vaccines

##### 10.2.5 Peptide as Cytotoxic Drug Carrier

##### 10.2.6 Cell-Penetrating Peptides

##### 10.2.7 Peptides Applied in Cancer Diagnostics

##### 10.2.8 Peptides Applied in Treating Cancer

##### 10.2.9 Peptide-Based Vaccines in Clinical Development

#### 10.3 DNA/RNA Aptamers

##### 10.3.1 Clinical Use of Aptamers

#### 10.4 DNA Origami (DNA Nanorobots)

### **11.0 TARGETED THERAPIES BY INDICATION: AN OVERVIEW**

#### 11.1 Targeted Cancer Therapies

##### 11.1.1 Identification of Targets in Cancer Therapy

##### 11.1.2 Categories and Examples of Tumor Antigens

##### 11.1.3 Development of Targeted Therapies for Cancer

##### 11.1.4 Targeted Cancer Therapies in Late Stage Development

##### 11.1.5 Companies Focusing on Oncology Applications of Targeted Drug Delivery

#### 11.2 Monoclonal Antibodies (mAbs) and Targeted Drug Delivery

##### 11.2.1 Monoclonal Antibodies (mAbs)

##### 11.2.1.1 Naked mAbs



- 11.2.1.2 Examples of Naked mAbs and their Functions
- 11.2.1.3 Conjugated mAbs
- 11.2.1.4 Bispecific mAbs
- 11.2.2 U.S./E.U.-Approved mAbs
- 11.2.3 mAbs by Indication Area
- 11.2.4 mAb Biosimilars in Late Stage Development
- 11.2.5 Biosimilar mAbs in Development
- 11.3 Ocular Applications of Targeted Drug Delivery
  - 11.3.1 Ocular Applications of Dendrimer Systems
  - 11.3.2 Ocular Applications of Liposomes
  - 11.3.3 Micelles in Ocular Drug Delivery
    - 11.3.3.1 Micelle Systems Investigated for Ocular Drug Delivery
  - 11.3.4 Viral and Non-Viral Vectors for Ocular Gene Delivery
- 11.4 Targeted Drug Delivery for Central Nervous System (CNS) Disorders
  - 11.4.1 Blood Brain Barrier (BBB)
  - 11.4.2 Drug Delivery Approaches and Drug Molecules for Brain
  - 11.4.3 Examples of Nanoparticles (NPs) used for Delivery of Drugs across BBB
  - 11.4.4 Examples of Clinically-Approved NPs Therapeutics for CNS Disorders
  - 11.4.5 Dendrimers for CNS Drug Delivery
- 11.5 Infectious Disease Applications for Targeted Drug Delivery
  - 11.5.1 Liposomes for Antimicrobial Drug Delivery
  - 11.5.2 Polymeric Nanoparticles for Antimicrobial Drug Delivery
  - 11.5.3 Solid Lipid Nanoparticles (SLNs) for Antimicrobial Drug Delivery
  - 11.5.4 Dendrimers for Antimicrobial Drug Delivery
- 11.6 Cardiovascular Applications for Targeted Drug Delivery
  - 11.6.1 Nanoparticles for Advanced Diagnostics and Therapy of Cardiovascular Diseases
  - 11.6.2 Therapeutic and Theranostic Nanoparticles for CVD
  - 11.6.3 In vivo Nanosensors for CVD
- 11.7 Targeted Drug Delivery for Pulmonary Diseases
  - 11.7.1 Drugs for Inhalation
  - 11.7.2 Polymers for Colloidal Pulmonary Drug Delivery Systems
  - 11.7.3 Nebulizers with Novel Technologies for Pulmonary Drug Delivery
  - 11.7.4 Novel Dry Powder Inhalers (DPIs)
  - 11.7.5 Types of Nanoparticles used to Encapsulate API Molecules
- 11.8 Cosmeceutical Applications of Nano-Based Drugs for Targeted Delivery

## **12.0 OTHER TARGETED DRUG DELIVERY TECHNOLOGIES**

- 12.1 Ocular Implants
  - 12.1.1 Ocular Implants under Clinical Development
  - 12.1.2 FDA-Approved Ocular Drug Delivery Implants
  - 12.1.3 Sustained Trans-Scleral Ocular Drug Delivery
- 12.2 Drug Eluting Stents (DES) and Targeted Drug Delivery
  - 12.2.1 Polymers for Stent Coatings
- 12.3 Microchips: The Novel Implantable Drug Delivery Technology

## **13.0 MARKET ANALYSIS TO 2021**

- 13.1 Applications of Nanoparticles in Healthcare
- 13.2 Types of Nanomedicine Companies
- 13.3 Global Market for Nanomedicines to 2021
  - 13.3.1 Nanomedicines Market by Major Therapeutic Area
- 13.4 Global Market for Targeted Drug Delivery to 2021
  - 13.4.1 Global Market for mAbs to 2021
    - 13.4.1.1 Best-Selling mAbs 2014-2021
    - 13.4.1.2 Global Market for Humira, Remicade and Avastin
    - 13.4.1.3 Global Market for Rituxan, Soliris and Herceptin
    - 13.4.1.4 Global Market for Kadcyla, Perjeta and Lucentis
    - 13.4.1.5 Global Market for Xgeva/Prolia, Stelara and Tysarbi
- 13.5 Global Market for Nanoparticle-Based Targeted Drug Delivery Systems to 2021
- 13.6 Ocular Drug Delivery Market to 2021
  - 13.6.1 Novel Ocular Drug Delivery Systems
    - 13.6.1.2 Ocular Drug Delivery Implants
- 13.7 Global Market for Implanted Drug Eluting Stents to 2021
- 13.8 Pulmonary Drug Delivery to 2021
- 13.9 What does the Future hold for the Targeted Drug Delivery Market?
- 13.10 Impact of New Technology Systems on the Current Targeted Delivery Market
- 13.11 Future Directions in Drug Delivery
- 13.12 Disruptive Technologies within the Existing Targeted Delivery Market
  - 13.12.1 Emergence of Hydrogels in Oral Drug Delivery
  - 13.12.2 Emergence of PEGylated Phospholipid Nanocarriers for Respiratory Diseases
  - 13.12.3 Emergence of Cyclodextrins
    - 13.12.3.1 Cyclodextrins in Oral Drug Delivery
    - 13.12.3.2 Cyclodextrins in Rectal Drug Delivery
    - 13.12.3.3 Cyclodextrin in Nasal Drug Delivery
    - 13.12.3.4 Cyclodextrins in Transdermal Drug Delivery
    - 13.12.3.5 Cyclodextrins in Ocular Drug Delivery

### 13.12.3.6 Cyclodextrins in Controlled Drug Delivery

## 14.0 SELECTED COMPANY PROFILES

### 14.1 3M Company

#### 14.1.1 3M Drug Delivery Systems

### 14.2 Abbott Laboratories

#### 14.2.1 Gengraf

#### 14.2.2 Kaletra

#### 14.2.3 Norvir

### 14.3 Ablynx NV

#### 14.3.1 Nanobody Technology

#### 14.3.2 Clinical Programs

#### 14.3.3 Ablynx's Partnership with Boehringer Ingelheim

#### 14.3.4 Ablynx's Partnership with Eddingpharm

#### 14.3.5 Ablynx's Partnership with Genzyme

#### 14.3.6 Ablynx's Partnership with Merck & Co.

#### 14.3.7 Ablynx's Partnership with Merck KGaA

#### 14.3.8 Ablynx's Partnership with Novartis

#### 14.3.9 Ablynx's Partnership with Taisho Pharmaceutical

### 14.4 Aciont Inc.

#### 14.4.1 Visulex Technology

### 14.5 Acrux

#### 14.5.1 Patchless Patch

#### 14.5.2 Axiron

#### 14.5.3 Evamist & Lenzetto

### 14.6 Agilis Biotherapeutics LLC

#### 14.6.1 Agilis' Engineered DNA Therapeutics

#### 14.6.2 Agilis' DNA Therapeutic Programs

##### 14.6.2.1 DNA Therapeutics for Friedreich's Ataxia

##### 14.6.2.2 DNA Therapeutics for Angelman Syndrome (AS)

### 14.7 Aileron Therapeutics Inc.

#### 14.7.1 P53 Pathway Re-Activator

### 14.8 Alchemia Oncology Pty Ltd.

#### 14.8.1 HA-Irinotecan

#### 14.8.2 HA-Doxorubicin (Hyaluronic acid + Doxorubicin)

#### 14.8.3 HA-5-Fluorouracil (Hyaluronic acid + 5-Fluorouracil)

#### 14.8.4 Monoclonal Antibodies

### 14.9 Alkermes Pharma Ireland Ltd.

- 14.9.1 Aristada
- 14.9.2 Vivitrol
- 14.9.3 U.S. Products using Alkermes' Technologies
  - 14.9.3.1 Bydureon
  - 14.9.3.2 Ampyra
  - 14.9.3.3 Risperdal Consta
  - 14.9.3.4 Invega Trinza
- 14.9.4 Alkermes' Long-Acting Technologies
  - 14.9.4.1 Medisorb Technology
  - 14.9.4.2 LinkeRx Technology
  - 14.9.4.3 NanoCrystal Technology
- 14.10 Allergan Inc.
  - 14.10.1 Doryx (Delayed-Release Tablets)
  - 14.10.2 Saphris (Sub-Lingual Tablets)
  - 14.10.3 Namenda XR (Extended Release Capsules)
  - 14.10.4 Namzaric (Extended Release Capsule)
  - 14.10.5 Asacol HD (Delayed-Release Tablets)
  - 14.10.6 Delzicol (Delayed-Release Tablets)
  - 14.10.7 Zenpep (Delayed-Release Tablets)
- 14.11 Alnylam Pharmaceuticals
  - 14.11.1 Development Pipeline
  - 14.11.2 Strategic Alliances
- 14.12 AmpliPhi Biosciences
  - 14.12.1 Product Pipeline
- 14.13 Andros Pharmaceuticals Co., Ltd.
  - 14.13.1 High-End Cosmetic Ingredient
  - 14.13.2 Topical Drug Delivery System
  - 14.13.3 Gene Delivery System
- 14.14 Angiochem Inc.
  - 14.14.1 LRP-1 Technology
- 14.15 Antares Pharma Inc.
  - 14.15.1 VIBEX
  - 14.15.2 Pen Injectors
  - 14.15.3 Partnered Products
- 14.16 Aposense Ltd.
  - 14.16.1 Apo-si
  - 14.16.2 ATT-11T
  - 14.16.3 F-ML-10
  - 14.16.4 ATT-LD

- 14.17 Applied Genetic Technologies Corp. (AGTC)
  - 14.17.6 Technology
- 14.18 Aptagen LLC
  - 14.18.1 Apta-Services (R&D Support)
  - 14.18.2 Apta-Index
- 14.19 Aradigm Corp.
  - 14.19.1 Technology
  - 14.19.2 Aradigm's Product Pipeline
- 14.20 ArisGen SA
  - 14.20.1 ArisCrown Technology
  - 14.20.2 Sublingual Exenatide ARG011
- 14.21 Armagen Technologies Inc.
  - 14.21.1 Armagen's Technology
  - 14.21.2 Armagen's Licensing and Collaboration Agreement with Shire
  - 14.21.3 Armagen's Partnership with PacificGMP
- 14.22 Arrowhead Research Corp.
  - 14.22.1 Arrowhead's Lead Products
  - 14.22.2 The Dynamic Polyconjugate Platform
- 14.23 Artificial Cell Technologies Inc.
  - 14.23.1 Technology
  - 14.23.2 Respiratory Syncytial Virus (RSV) Vaccine
  - 14.23.3 Malaria Vaccine
- 14.24 AsclepiX Therapeutics LLC
  - 14.24.1 Anti-Angiogenesis Therapy
- 14.25 Asklepios BioPharmaceutical Inc.
  - 14.25.1 Asklepios' Collaboration with Baxter
  - 14.25.2 Asklepios' Collaboration with Medtronic
  - 14.25.3 Asklepios' Collaboration with ALS Therapy Development Institute
  - 14.25.4 Asklepios' Collaboration with Genzyme
  - 14.25.5 Asklepios' Collaboration with Pfizer
- 14.26 Astellas Pharma Inc.
  - 14.26.1 AmBisome
- 14.27 Audentes Therapeutics Inc.
  - 14.27.1 Technology
- 14.28 Avalanche Biotechnologies Inc.
  - 14.28.1 The Ocular BioFactory Platform
- 14.29 Avita Medical Ltd.
  - 14.29.1 ReCell FOR Burns and Plastics
  - 14.29.2 ReCell for pigmentation

- 14.29.3 ReCell for Chronic Wounds
- 14.29.4 Funhaler
- 14.29.5 Breath-A-Tech
- 14.30 Azaya Therapeutics Inc.
  - 14.30.1 Products
- 14.31 Bachem Americas Inc.
  - 14.31.1 API Products
- 14.32 Bayer Pharma AG
  - 14.32,1 Cipro
- 14.33 BBB Therapeutics BV
  - 14.33.1 G-Technology
  - 14.33.2 Product Pipeline
- 14.34 Bepak Europe Ltd.
  - 14.34.1 Inhalation Delivery Devices
  - 14.34.2 Injectable Drug Delivery Devices
  - 14.34.3 VapourSoft Technology
  - 14.34.4 ASI Technology
- 14.35 Bicycle Therapeutics Ltd.
  - 14.35.1 Bicycle Molecules
  - 14.35.2 R & D in Oncology
  - 14.35.3 R & D in Ophthalmology
- 14.36 BigDNA Ltd.
  - 14.36.1 Technology
- 14.37 BIND Therapeutics Inc.
  - 14.37.1 Accurins
  - 14.37.2 BIND Therapeutics' Intellectual Property
  - 14.37.3 BIND's Collaboration with Pfizer
  - 14.37.4 BIND's Collaboration with Merck
- 14.38 BioDelivery Sciences International Inc.
  - 14.38.1 BEMA Technology
  - 14.38.2 Onsolis
  - 14.38.3 Belbuca (Buprenorphine HCL Buccal Film)
  - 14.38.4 Bunavail
  - 14.38.5 Clonidine Topical Gel
- 14.39 Bioject Medical Technologies Inc.
  - 14.39.1 Technology
  - 14.39.2 Biojector 2000
  - 14.39.3 Bioject Zetajet
  - 14.39.4 Biojet Drug Reconstitution System

- 14.39.5 Needle-Free Vial Adapter
- 14.40 BioZone Laboratories Inc.
  - 14.40.1 QuSomes Technology
  - 14.40.2 LipoSpray Technology
  - 14.40.3 Ela-Max
- 14.41 Camurus AB
  - 14.41.1 Technologies
    - 14.41.1.1 FluidCrystal Injection Depot
    - 14.41.1.2 FluidCrystal Topical Bioadhesive
    - 14.41.1.3 FluidCrystal Nanoparticles
    - 14.41.1.4 CAM2029
    - 14.41.1.5 CAM2038
    - 14.41.1.6 CAM2038 (Chronic Pain)
    - 14.41.1.7 CAM2032
    - 14.41.1.8 Episil Oral Liquid
- 14.42 Celsion Corp.
  - 14.42.1 Celsion's LTLTLD Technology
  - 14.42.2 Celsion's Pipeline
- 14.43 CeramiSphere Pty Ltd.
  - 14.43.1 Technology
    - 14.43.1.1 Mucosal Delivery of Proteins
    - 14.43.1.2 Delivery of DNA and RNA
    - 14.43.1.3 Delivery of Wound Healing Drugs
- 14.44 Cerulean Pharma Inc.
  - 14.44.1 Nanoparticle-Drug Conjugates (NDCs)
- 14.45 Chrysalis BioTherapeutics Inc.
  - 14.45.1 Radiation Therapy (TP508)
  - 14.45.2 Solution for Nuclear Emergencies
  - 14.45.3 Solution for Cardiovascular Disease
  - 14.45.4 Solution for Regenerative Medicine
- 14.46 Copernicus Therapeutics Inc.
  - 14.46.1 Technology
- 14.47 Cornerstone Pharmaceuticals Inc.
  - 14.47.1 AEMD Platform
  - 14.47.2 Emulsiphon Pipeline
- 14.48 CureVac AG
  - 14.48.1 CureVac's RNA Technology Platforms
- 14.49 CytImmune Sciences Inc.
  - 14.49.1 Aurimmune

- 14.49.2 CYT-6091
- 14.49.3 CYT-21000
- 14.49.4 Partnership with Coldstream Laboratories Inc.
- 14.50 DepoMed Inc.
  - 14.50.1 Acuform Technology
  - 14.50.2 Products
    - 14.50.2.1 Nucynta ER
    - 14.50.2.2 Cambia
    - 14.50.2.3 Lazanda
    - 14.50.2.4 Zipsor
- 14.51 Dicerna Pharmaceuticals
  - 14.51.1 DsiRNA-EX-Conjugate technology
  - 14.51.2 EnCore Lipid Nanoparticles
- 14.52 Dimension Therapeutics Inc.
  - 14.52.1 Engineered AAV Vectors
  - 14.52.2 Hemophilia Program
  - 14.52.3 Ornithine transcarbamylase (OTC) deficiency
  - 14.52.4 Glycogen Storage Disease Type Ia (GSDIa)
- 14.53 Dipexium Pharmaceuticals Inc.
  - 14.53.1 Locilex
- 14.54 Discovery Laboratories Inc.
  - 14.54.1 AEROSURF – Aerosolized KL4 Surfactant
  - 14.54.2 KL4 Surfactant
  - 14.54.3 Capillary Aerosol Generator (CAG) Technology
- 14.55 DURECT
  - 14.55.1 Technologies
    - 14.55.1.1 Epigenomic Regulator Program
    - 14.55.1.2 Long-Acting Injectables
    - 14.55.1.3 Abuse Deterrent Technology
    - 14.55.1.4 Transdermal Technology
  - 14.55.2 Patents
  - 14.55.3 Products in Development
    - 14.55.3.1 DUR-928
    - 14.55.3.2 POSIMIR
    - 14.55.3.3 REMOXY
    - 14.55.3.4 ORADUR
    - 14.55.3.5 ORADUR – Methylphenidate
    - 14.55.3.6 RELDAY
    - 14.55.3.7 ELADUR



- 14.55.4 Commercial Products
  - 14.55.4.1 ALZET Osmotic Pumps
  - 14.55.4.2 LACTEL
- 14.56 EnGeneIC Ltd
  - 14.56.1 EDV Nanocells
  - 14.56.2 Completion of Series B Financing
  - 14.56.3 2015 Thomson Reuters Award
  - 14.56.4 EnGeneIC's Phase I Clinical Study for Advanced Glioma Patients
- 14.57 Ensysce Biosciences Inc.
  - 14.57.1 Single-Walled Carbon Nanotubes (SWCNT)
  - 14.57.2 Ensysce's Product Pipeline
- 14.58 EryDel SpA
  - 14.58.1 Technology
  - 14.58.2 EryDex System
- 14.59 EryTech Pharma
  - 14.59.4 ERY-ASP (GRASPA)
  - 14.59.5 EryTech's Key Corporate Facts
  - 14.59.6 Deloitte Award
- 14.60 Esperance Pharmaceuticals Inc.
  - 14.60.1 MDPs Technology
  - 14.60.2 Pipeline
- 14.61 Exicure Inc.
  - 14.61.1 SNA Platform
- 14.62 FIT Biotech Oy
  - 14.62.1 Gene Transfer Unit (GTU) Platform
- 14.63 Flamel Technologies S.A.
  - 14.63.1 Flamel's Drug Delivery Platforms
  - 14.63.2 Micropump
  - 14.63.3 LiquiTime
  - 14.63.4 Trigger Lock
  - 14.63.5 Medusa
- 14.64 Generex Biotechnology Corp.
  - 14.64.1 RapidMist Technology
  - 14.64.2 Antigen Express Technology
  - 14.64.3 Generex Oral-Lyn
- 14.65 Genetic Immunity Inc.
  - 14.65.1 DermaVir
  - 14.65.2 Technology
    - 14.64.2.1 DermaPrep

- 14.64.2.2 ANTIGENeering
- 14.64.2.3 Nanomedicine
- 14.65 Genus Pharmaceuticals Ltd.
  - 14.65.1 Fenogal
- 14.66 GenVec Inc.
  - 14.66.1 AdenoVerse Technology
- 14.67 GlaxoSmithKline LLC
  - 14.67.1 Adavir Diskus
  - 14.67.2 Sustiva
  - 14.67.3 Agenerase
- 14.68 Glide Pharmaceutical Technologies Ltd.
  - 14.68.1 Technologies
- 14.69 Heron Therapeutics Inc.
  - 14.69.1 Biochronomer Technology
  - 14.69.2 Sustol
  - 14.69.3 HTX-019
  - 14.69.4 HTX-011
- 14.70 Hoffmann-LaRoche Inc.
  - 14.70.1 Fortovase
- 14.71 ICB International Inc.
  - 14.71.1 Platform Technology
- 14.72 iCeutica Inc.
  - 14.72.1 Product Pipeline
  - 14.72.2 SoluMatrix Technology
- 14.73 ImmusanT Inc.
- 14.74 InDex Pharmaceuticals AB
  - 14.74.1 Kappaproct
- 14.75 Immune Design
- 14.76 Immunocore Ltd.
  - 14.76.1 ImmTACs
- 14.77 Inovio Pharmaceuticals
  - 14.77.1 SynCon Technology
- 14.78 Insite Vision Inc.
  - 14.78.1 DuraSite Technology
- 14.79 Insmed Inc.
- 14.80 Intezyne Technologies Inc.
  - 14.80.1 IVECT Method
  - 14.80.2 Intezyne's Pipeline
- 14.81 Keystone Nano Inc.

- 14.81.1 NanoJacket Technology
- 14.81.2 NanoLiposome Technology
- 14.82 Kowa Pharmaceuticals America Inc.
  - 14.82.1 Livalo
  - 14.82.2 Lipofan
- 14.83 LipimetiX Inc.
  - 14.83.1 Technology
- 14.84 LiPlasome Pharma ApS
  - 14.84.1 LiPlasome's Pipeline
  - 14.84.2 LiPlaCis
- 14.85 Lipocine Inc.
  - 14.85.1 LCPN 1021
  - 14.85.2 LCPN 1111
  - 14.85.3 LPCN 1107
  - 14.85.4 Lip'ral Technology
- 14.86 Lipotek Pty Ltd.
  - 14.86.1 Technology
- 14.87 Living Cell Technologies Ltd.
  - 14.87.1 DIABECCELL
  - 14.87.2 NTCELL
- 14.88 Madison Vaccines Inc.
  - 14.88.1 Technology
- 14.89 MagForce AG
  - 14.89.1 NanoTherm Therapy
  - 14.89.2 NanoTherm
  - 14.89.3 NanoPlan
  - 14.89.4 NanoActivator
- 14.90 Mankind Pharma Ltd.
  - 14.90.1 Technosphere Technology
- 14.91 Mersana Therapeutics Inc.
  - 14.91.1 Fleximer Platform
  - 14.91.2 Dolaflexin
  - 14.91.3 Mersana's Partnership with Takeda
  - 14.91.4 Mersana's Partnership with EMD Serono
  - 14.91.5 Mersana's Partnership with Recepta Biopharma S.A.
- 14.92 Micochips Biotech Inc.
  - 14.92.1 Technology
  - 14.92.2 Applications
  - 14.92.3 Current Partnerships

- 14.92.3.1 Teva Pharmaceuticals
- 14.92.3.2 Gates Foundation
- 14.93 Milo Biotechnology LLC
  - 14.93.1 Technology
- 14.94 miRagen Therapeutics Inc.
- 14.95 Mirna Therapeutics Inc.
  - 14.95.1 Technology
  - 14.95.2 MRX34
- 14.96 Miros Polymers Inc.
  - 14.96.1 Technology
  - 14.96.2 Drug Delivery Systems
    - 14.96.2.1 ExCell
    - 14.96.2.2 PolyGel
- 14.97 Moderna Therapeutics Inc.
  - 14.97.1 mRNA Expression Platform
- 14.98 MultiVir Inc.
  - 14.98.1 MultiVir's Product Candidates
- 14.99 Mystic Pharmaceuticals Inc.
  - 14.99.1 VersiDoser Delivery Platform
  - 14.99.2 VRx2 Delivery Platform
  - 14.99.3 Intranasal Delivery Systems
  - 14.99.4 Nose to Brain Delivery Systems
  - 14.99.5 Ophthalmic Delivery Systems
  - 14.99.6 Sublingual Delivery Systems
- 14.100 Nanobiotix
  - 14.100.1 NanoXray
- 14.101 Nanocarrier Co., Ltd.
  - 14.101.1 Micellar Nanoparticles
- 14.102 Nanocopoeia Inc.
  - 14.102.1 ElectroNanospray (ENS) Process
- 14.103 NanoMedical Systems Inc.
  - 14.103.1 Personalized Molecular Drug Delivery System (PMDS)
  - 14.103.2 NanoMedical Diagnostics (NMD)
  - 14.103.3 Multi-Stage NanoVector Drug Delivery System (MSV)
- 14.104 NanoOncology Inc. (PeptiMed Inc.)
  - 14.104.1 NanoOncology's Product Pipeline
  - 14.104.2 Ovarian Cancer Program
  - 14.104.3 Breast Cancer Program
  - 14.104.4 Lung Cancer Program

- 14.105 Nanospectra Biosciences Inc.
  - 14.105.1 AuroLase Therapy
- 14.106 Nano Precision Medical Inc.
  - 14.106.1 The NanoPortal Solution
- 14.107 Nanotherapeutics Inc.
- 14.108 nanoTherics Ltd
  - 14.108.1 magneTherm
  - 14.108.2 Live Cell Alternating Magnetic Field Exposure System (LC-AMF System)
  - 14.108.3 Magnefect System
- 14.109 NanoVector Inc.
  - 14.109.1 Product Strategy
  - 14.109.2 NVI-9010
- 14.110 NanoViricides Inc.
  - 14.110.1 Platform Technology
- 14.111 Nektar Therapeutics
  - 14.111.1 Technology
- 14.112 Neos Therapeutics Inc.
  - 14.112.1 Proprietary Technology
  - 14.112.2 Rapidly Disintegrating Ionic Masking
  - 14.112.3 Dynamic Time Release Suspension
  - 14.112.4 Kinetically Controlled Tamper Protection
  - 14.112.5 Currently Marketed Product
- 14.113 NeXstar Pharmaceuticals Inc.
  - 14.113.1 DaunoXome
- 14.114 NightstaRx Ltd.
  - 14.114.1 AAV2-REP1
- 14.115 NOD Pharmaceuticals Inc.
  - 14.115.1 Technology
    - 14.115.1.1 Nodlin
    - 14.115.1.2 Nodexen
- 14.116 Nordic Nanovector ASA
  - 14.116.1 Antibody-Radionucleotide-Cojugate
  - 14.116.2 Betalutin
- 14.117 Novagali Pharma S.A.
  - 14.117.1 Novasorb Technology
- 14.118 Novartis Pharmaceuticals Corp.
  - 14.118.1 Neoral
- 14.119 Ocular Therapeutix Inc.
  - 14.119.1 ReSure Sealant

- 14.119.2 Dextenza
- 14.119.3 Sustained Release Travoprost
- 14.119.4 Posterior Segment Injections
- 14.120 Oncolytics Biotech Inc.
  - 14.120.1 Reolysin
- 14.121 Oxford Biomedica plc
  - 14.121.1 OXB-201 (RetinoStat)
  - 14.121.2 SAR 422459
  - 14.121.3 SAR 421869
  - 14.121.4 EncorStat
  - 14.121.5 OXB-102
  - 14.121.6 MoNuDin
  - 14.121.7 OXB-301 (TroVax)
  - 14.121.8 Anti-5T4 Antibody
  - 14.121.9 The LentiVector Platform
  - 14.121.10 5T4 Tumor Antigen
  - 14.121.11 CAR-T Cell Therapy
- 14.122 PDS Biotechnology Corp.
  - 14.122.1 Versamune NanoPlatform-
- 14.123 PharmaIN Corp.
  - 14.123.1 Protected Graft Copolymer (PGC)
- 14.124 PhaseRx Inc.
  - 14.124.1 mRNA Technology
- 14.125 Phico Therapeutics Ltd.
  - 14.125.1 Technology
  - 14.125.2 Products
    - 14.125.2.1 SASPject PT1.2
    - 14.125.2.2 SASPject PT3.1
    - 14.125.2.3 SASPject PT4
- 14.126 PolyActiva Pty Ltd.
  - 14.126.1 Drug Delivery Platform
  - 14.126.2 Glaucoma Program
  - 14.126.3 Endophthalmitis
  - 14.126.4 Osteoarthritis Program
- 14.127 PolyMicrospheres
- 14.128 PolyTherics Ltd.
  - 14.128.1 ThioBridge
  - 14.128.2 TheraPEG
  - 14.128.3 HiPEG

- 14.128.4 CyPEG
- 14.128.5 PolyPEG
- 14.129 Presage Biosciences Inc.
  - 14.129.1 CIVO Platform
- 14.130 pSivida Corp.
  - 14.130.1 Durasert Technology
  - 14.130.2 pSivida's Product Pipeline
  - 14.130.3 Iluvien
  - 14.130.4 Retisert
  - 14.130.5 Durasert/Latanoprost
- 14.131 Pulmatrix Inc.
  - 14.131.1 iSPERSE
  - 14.131.2 PUR1900
  - 14.131.3 PUR1500
  - 14.131.4 PUR0200
- 14.132 Quark Pharmaceuticals Inc.
  - 14.132.1 Quark's siRNA Technology Platform
- 14.133 Ra Pharmaceuticals Inc.
  - 14.133.1 RA101495
  - 13.133.2 Factor D Inhibitor
- 14.134 RaNA Therapeutics Inc.
- 14.135 RegeneRx Biopharmaceuticals Inc.
  - 14.135.1 T4 Peptide Research
- 14.136 Regenxbio Inc.
  - 14.136.1 NAV Technology
- 14.137 Renova Therapeutics Inc.
- 14.138 Replicor Inc.
  - 14.138.1 NAP Technology
  - 14.138.2 Replicor's Pipeline
    - 14.138.2.1 Phase II Proof of Concept Clinical Study Pipeline
  - 14.138.3 Replicor's Regulatory Pipeline
- 14.139 RetroSense Therapeutics LLC
  - 14.139.1 RST-001
- 14.140 Rexahn Pharmaceuticals Inc.
  - 14.140.1 Supinoxin (RX-5902)
  - 14.140.2 RX-3117
  - 14.140.3 Archexin
  - 14.140.4 RX-21101
  - 14.140.5 Archexin-Nano

- 14.141 RJS Biologics LLC
  - 14.141.1 Technology
- 14.142 Roche Holding AG
  - 14.142.1 Rocaltrol
  - 14.142.2 Accutane
- 14.143 Sarfez Pharmaceuticals Inc.
- 14.144 Savara Inc.
- 14.145 Scintipharma Inc.
  - 14.145.1 InteliSite Companion Capsule
- 14.146 Sequus Pharmaceuticals Inc.
  - 14.146.1 Amphocil
  - 14.146.2 Doxil
- 14.147 Serina Therapeutics Inc.
  - 14.147.1 POZ Technology
  - 14.147.2 Serina's Pipeline
- 14.148 Serpin Pharma LLC
  - 14.148.1 SP16
- 14.149 Silence Therapeutics PLC
- 14.150 Silenseed Ltd.
  - 14.150.1 The LODER Platform
- 14.151 Sylentis SA
  - 14.151.1 Bamosiran
  - 14.151.2 SYL 1001
- 14.152 SoluBest Ltd.
  - 14.152.1 Solumer Technology
  - 14.152.2 Sepomer Technology
  - 14.152.3 Contromer
  - 14.152.4 Advanced Stage Products
  - 14.152.5 Fenofibrate
  - 14.152.6 Albendazole
  - 14.152.7 Resveratrol
  - 14.152.8 Testosterone undecanoate
- 14.153 Spark Therapeutics
- 14.154 Spheringenics Inc.
  - 14.154.1 Technology
- 14.155 Suda Ltd.
  - 14.155.1 Technology
  - 14.155.2 ZolpiMist: Insomnia
  - 14.155.3 ArTiMist: Malayria



- 14.155.4 SUD-001: Migraine
- 14.155.5 SUD-002: Nausea
- 14.155.6 SUD-003: Erectile Dysfunction
- 14.155.7 SUD-004: Pulmonary Arterial Hypertension
- 14.155.8 SUD-005: Anxiety
- 14.156 Supratek Pharma Inc.
  - 14.156.1 Biotransport Technology
  - 14.156.2 CombiForm Toolbox
  - 14.156.3 Product Pipeline
- 14.157 Taiwan Liposome Co. Ltd.
  - 14.157.1 Technology
    - 14.157.1.1 Nano-Emulsion
    - 14.157.1.2 Polymeric Mycelle
    - 14.157.1.3 NanoX
    - 14.157.1.4 Immunoliposome
    - 14.157.1.5 BioSeizer
  - 14.157.2 Pipeline
    - 14.157.2.1 Doxisome
    - 14.157.2.2 Lipo-Dox
    - 14.157.2.3 Lipotecan
    - 14.157.2.4 TLC178
    - 14.157.2.5 AmBiL
    - 14.157.2.6 ProFlow
    - 14.157.2.7 ProDex
    - 14.157.2.8 TLC599
- 14.158 TheraSource LLC
  - 14.158.1 rhMFG-E8
  - 14.158.2 Ghrelin
  - 14.158.3 AM/AMBP-1
- 14.159 Transgene SA
- 14.160 Valeant Pharmaceuticals International Inc.
  - 14.160.1 Efudex
- 14.161 Vect-Horus S.A.S.
  - 14.161.1 Technology
  - 14.161.2 Vect-Horus' Scientific Collaboration with Servier
  - 14.161.3 Vect-Horus' Scientific Collaboration with Servier
- 14.162 Vectura Group plc
  - 14.162.1 PowderHale
  - 14.162.2 ParticleMax

- 14.162.3 GyroHaler
- 14.162.4 Akita Jet
- 14.162.5 Akita Apixneb
- 14.162.6 Fox
- 14.163 Vical Inc.
  - 14.163.1 Poloxamer Delivery System
  - 14.163.2 Vaxfectin Adjuvant
- 14.164 Voyager Therapeutics Inc.
- 14.165 WAVE Life Sciences Pvt. Ltd.
  - 14.165.1 Platform
- 14.166 Xel Pharmaceuticals
  - 14.166.1 Xel's Proprietary Drug Delivery Technologies
  - 14.166.2 Transdermal Delivery System
  - 14.166.3 Topical Delivery System
  - 14.166.4 Implant Delivery Systems
  - 14.166.5 Oral Controlled Release
  - 14.166.6 Effervescent Tablet/Lozenge
  - 14.166.7 Cold Water Extraction
- 14.167 Xenetic Biosciences
  - 14.167.1 Technologies
    - 14.167.1.1 PolyXen
    - 14.167.1.2 OncoHist
- 14.168 Xigen SA
  - 14.168.1 Technology
- 14.169 Zealand Pharma AS
- 14.170 Zozano Pharma Corp.
  - 14.170.1 ZP-PTH
  - 14.170.2 Zozano's Product Pipeline

## Index Of Figures

### INDEX OF FIGURES

- Figure 1.1: Summary of Targeted Drug Delivery Market, Through 2021
- Figure 2.1: Conventional and Ideal Drug Release Profiles
- Figure 2.2: Schematic Representation of Active Targeting
- Figure 2.3: Diagrammatic Representation of Passive Targeting
- Figure 3.1: Internalization of Nanomedicine
- Figure 3.2: Conceptual Visualization of a Future Multifunctional Nanomedicine
- Figure 4.1: Classification and Type of Liposomes
- Figure 4.2: Diagrammatic Representation of a Liposome
- Figure 4.3: Drug Loading Efficiency of Liposomes
- Figure 4.4: Intracellular Delivery by pH-Sensitive and Plain Liposomes
- Figure 4.5: Schematic Diagram of a Stealth Liposome
- Figure 4.6: Schematic of Tumor Targeting Multifunctional Liposome
- Figure 4.7: Stimuli Sensitive Multifunctional Targeted Liposome with Low pH Degradable Bonds
- Figure 5.1: Delivery of Drugs by Polymers
- Figure 6.1: Schematic Diagram Showing Micelle Formation
- Figure 6.2: Drug-Loaded Polymeric Micelles with Various Targeting Functions
- Figure 6.3: A Hypothetical Polymeric Micelle
- Figure 7.1: Three-Dimensional Structure of Dendrimers
- Figure 7.2: Dendrimers as Multifunctional Nanoplatfoms
- Figure 8.1: Mechanism of Antimicrobial Activity of Carbon Nanotubes
- Figure 8.2: Trimetalic Nitride Endohedral Metallofullerene and Empty Cage Fullerene C70
- Figure 8.3: Schematic Illustration of Preparation, Drug Loading and Drug Delivery by GO
- Figure 8.4 AuNPs with Conjugated Drug
- Figure 8.5: Shaped of Gold Nanoparticles
- Figure 8.6: Drug Carrying Ability of Silica Nanoparticles
- Figure 8.7: A Typical Design of a Magnetic Nanoparticle
- Figure 8.8: Schematic Representation of Magnetic Nanoparticles with Surface Modifications
- Figure 8.9: Conceptual Representation of MNP Tumor Targeting
- Figure 9.1: Schematic Representation of Dendritic Cells Expressing a Number of Different Cell Surface Receptors which are Targets for Antigen Targeting Therapies
- Figure 9.2: Therapeutic Sites and Targets Accessible for RBC-Delivered Drugs

- Figure 9.3: Procedure of Encapsulating Bacterial Ghost with Drugs
- Figure 10.1: Different Possible Treatment Options of Cancer Using Peptides
- Figure 10.2: Schematic of Peptide Receptor Radionuclide Therapy (PRRT)
- Figure 10.3: Mechanism of Action of Peptide-Based Cancer Vaccines
- Figure 10.4: Schematic Diagram of Aptamer Binding to its Target
- Figure 10.5: Schematic Diagram of Nanobot for Targeted Drug Delivery
- Figure 11.1: Tumor-Associated Antigens (TAA)
- Figure 11.2: mAbs binding to Cancer Cells
- Figure 11.3: Binding of Naked mAbs to the Antigens on Cancer Cells
- Figure 11.4: Schematic Representation of Conjugated mAb
- Figure 11.5: Binding of Radiolabeled mAbs to the Cancer Cells
- Figure 11.6: A Bispecific mAb
- Figure 11.7: Annual U.S./E.U. Approvals of mAbs as of 2015
- Figure 11.8: Schematic Illustration of Formation of Spherical Micelle and Drug Encapsulation
- Figure 12.1: Microchip Developed by Microchip Biotech
- Figure 13.1: Application of Nanotechnology in Healthcare
- Figure 13.2: Types of Nanomedicine Companies
- Figure 13.3: Global Market for Nanomedicines by Geography, Through 2021
- Figure 13.4: Global Market for Nanomedicines by Major Therapeutic Areas, Through 2021
- Figure 13.5: Global Targeted Drug Delivery Market, Through 2021
- Figure 13.6: Global Market for mAbs by Geography
- Figure 13.7: Global Market for Humira, Remicade and Avastin, Through 2021
- Figure 13.8: Global Market for Rituxan, Soliris and Herceptin, Through 2021
- Figure 13.9: Global Market for Kadcyla, Perjeta and Lucentis, Through 2021
- Figure 13.10: Global Market for Xgeva/Prolia, Stelara and Tysarbi, Through 2021
- Figure 13.11: Market for Nano-Based Targeted Drug Delivery Systems by Type, Through 2021
- Figure 13.12: Global Market for Novel Ocular Drug Formulations and Implants, Through 2021
- Figure 13.13: Global Market for Drug Eluting Stents by Geography, Through 2021
- Figure 13.14: Global Market for Pulmonary Drug Delivery Technologies, Through 2021
- Figure 14.1: Conventional and Heavy Chain Antibodies
- Figure 14.2: Restoration of P53 Activity by Stapled Peptide Dual Inhibitor
- Figure 14.3: Andros' Topical Delivery System
- Figure 14.4: Andros' Gene Delivery System
- Figure 14.5: Buccal and Oral Delivery of Peptides by Means of ArisCrown
- Figure 14.6: BBB Therapeutics' G-Technology

- Figure 14.7: Components of Accurins
- Figure 14.8: Celsion's LTLD Technology
- Figure 14.9: Mechanism of Action of Cerulean's NDCs
- Figure 14.10: Mechanism of Action of EDV Nanocells
- Figure 14.11: EryDel's Technology of Encapsulating Drugs into Erythrocytes
- Figure 14.12: ERY-ASP's Mode of Action
- Figure 14.13: Biochronomer Technology
- Figure 14.14: IVECT Method of Targeted Drug Delivery
- Figure 14.15: Improved Absorption Enabled by Lip'ral Technology
- Figure 14.16: Nanocarrier's Platform Technology
- Figure 14.17: Diagrammatic Description of NanoOncology's Technology
- Figure 14.18: Neos Therapeutics' Ion Exchange Process
- Figure 14.19: Mechanism of Action of Betalutin
- Figure 14.20: Diagrammatic Representation of PGC
- Figure 14.21: PolyActiva's Drug Polymer Conjugate
- Figure 14.22: Interaction between Phosphorothioated NAPs and Amphipathic Protein Targets
- Figure 14.23: The Making of Pendent POZ
- Figure 14.24: The Making of Pendent POZ-Therapeutics
- Figure 14.25: Diagrammatic Structure of Nano-Emulsion
- Figure 14.26: Diagrammatic Structure of Polymeric Micelle
- Figure 14.27: Diagrammatic Representation of Drug Loading in NanoX
- Figure 14.28: Diagrammatic Representation of the Specificity of Immunoliposomes
- Figure 14.29: Xigen's ICPT Technology

## Index Of Tables

### INDEX OF TABLES

Table 1.1: Summary of Targeted Drug Delivery Market, Through 2021

Table 2.1: A Comparison of Release Obtained from Various Particulate Delivery Systems

Table 2.2: Advantages and Disadvantages of Targeted Drug Delivery

Table 2.3: Examples of Actively Targeted Micelles

Table 2.4: Examples of Passively Targeted Therapeutic Preparations of Polymeric Micelle

Table 2.5: Polymeric Nanoparticles Developed for Passive Delivery of Drugs for Cancer

Table 3.1: Advantages of Nanoparticles in Drug Delivery

Table 3.2: Ideal Drug Delivery Characteristics of Nanodrugs

Table 3.3: Sizes of Some Nanoconstructs used in Therapeutics and Diagnostics

Table 3.4: Examples of Nanomedicines Approved by One or More Regulatory Bodies

Table 3.5: Examples of Nanomedicines Approved by FDA

Table 3.6 Nanoparticle Cancer Therapeutics Undergoing Clinical Investigation

Table 3.7: Passive vs. Active Targeting

Table 3.8: Targets of Nanomedicines in Our Body

Table 3.9: Commonly Available Ligands in Drug Delivery

Table 3.10: Examples of Nanomedicine Applications

Table 3.11: Rationale for Nanotherapeutic Approach

Table 3.12: Commercially Available Nanotherapeutic Products for Oral Administration

Table 3.13: Commercially Available Nanotherapeutics for Parenteral Administration

Table 3.14: Examples of FDA-Approved Nanomedicines for Intravenous Route of Administration

Table 3.15: Examples of FDA-Approved Nanomedicines for Pulmonary Route of Administration

Table 3.16: Examples of FDA-Approved Nanomedicines for Subcutaneous, Intramuscular, Transdermal and Ocular Route of Administration

Table 3.17: Examples of Nano-Based Medical Devices and Diagnostics

Table 3.18: Different Types of Nanocarriers used in Formulating Nanomedicines

Table 3.19: Different Types of Synthesized Nanoforms used in Biomedical Field

Table 3.20: Use of Nanoparticles in Different Fields of Medicine

Table 3.21: Marketed Nanosystems for Cancer Treatment

Table 3.22: Synthetic Nanomaterials used in Tissue Engineering

Table 3.23: Natural Nanomaterials Used in Tissue Engineering

Table 3.24: Examples of NPs-Based Gene Delivery in Stem Cells

Table 3.25: Examples of Contrast Agents using Nanoparticles

Table 4.1: Advantages and Disadvantages of Liposomes as Targeted Systems

Table 4.2: Classification of liposomes on the Basis of Size

Table 4.3: Classification of Liposomes on the Basis of Method of Preparation

Table 4.4: Sizes of Liposomes

Table 4.5: New Generation of Liposomes and their Features

Table 4.6: Benefits of Drug Loads in Liposomes

Table 4.7: Representative List of Liposome-Based Drugs

Table 4.8: Liposome-Based Drugs for Cancer Therapy

Table 4.9: List of Liposomal Drugs in Clinical Trial

Table 4.10: Different Modifications in Liposomes for Improved Drug Delivery

Table 4.11: Approved Stealth Liposome Formulations

Table 4.12: Examples of Ligands used for Targeting of Liposomal Nanocarriers

Table 4.13: Examples of PEGylated Liposomes used for Active Targeting

Table 5.1: Advantages and Disadvantages of Polymer-Based Carriers

Table 5.2: Various Stimuli and Responsive Polymeric Materials

Table 5.3: Various Smart Polymeric Drug Delivery Systems

Table 5.4: Applications of Thermosensitive Polymers for Drug Delivery Systems

Table 5.5: Classification, Representative Thermosensitive Polymers and their Applications

Table 5.6: Various Applications of pH Sensitive Polymeric Drug Delivery Systems

Table 5.7: Applications of Bioresponsive Polymers

Table 5.8: Examples of Natural Polymer-Based Topical Delivery Systems

Table 5.9: Examples of Topical Delivery Systems Based on Synthetic Polymers

Table 5.10: Clinically Approved Polymeric Nanomedicine for Cancer Treatment

Table 5.11: Polymeric Nanoparticle-Based Therapeutics Undergoing Clinical Investigation

Table 6.1 Materials Used to Prepare Micelles and the Release Obtained from these Micelles

Table 6.2: Some Existing Approaches to Achieve Sustained Release from Micelle

Table 6.3 Examples of Stimuli-Responsive Micelles

Table 6.4: Passively-Targeted Therapeutic Formulations of Polymeric Micelle

Table 6.5: Examples of Actively Targeted Micelle

Table 6.6: Examples of Stimuli-Responsive Polymeric Micelles

Table 6.7: Examples of Multifunctional Drug-Loaded Micelles

Table 6.8: Examples of Multifunctional siRNA-Loaded Micelles

Table 6.9: Representative List of Drug-Loaded Polymeric Micelle-Based Products

Table 7.3: List of Commercially Available Dendrimers and Dendrimer-Based Products

Table 7.4: Therapeutic Moities Studied using Dendrimers

Table 7.5: Types of Thermosensitive Dendrimers

Table 8.1: Advantages and Disadvantages of Inorganic Nanoparticles

Table 8.2: Carbon-Based Nanoparticles as Antimicrobial Agents

Table 8.3: Comparison between MWCNT and SWCNT

Table 8.4: Applications of Nanotubes as Artificial Implants

Table 8.5: Examples of Carbon Nanotubes used for the Detection of Cancer Biomarkers

Table 8.6: Examples of Drugs and Nucleic acids Delivered by Carbon Nanotubes

Table 8.7: Summary of Biomedical Applications of Fullerenes

Table 8.8: Drug and Gene Delivery Applications of GO-Based Vehicles

Table 8.9: Imaging Applications of Gold Nanoparticles

Table 8.10: Drug Delivery Applications of Gold Nanoparticles

Table 8.11: Diagnostic Applications of Gold Nanoparticles

Table 8.12: Types of Silica Nanoparticles with their Internal Structure and Pore Diameter

Table 8.13: Common Chemical Constituents used in the Preparation of Silica Nanoparticles

Table 8.14: Types of Drugs Delivered through Silica Nanoparticles

Table 8.15: Advantages and Disadvantages of Magnetic Particles

Table 8.16: Magnetic Nanoparticles used in Biomedical Applications

Table 8.17: Examples of Coating Materials of Magnetic Nanoparticles

Table 8.18: Examples of Organic Linkers and their Applications in Magnetic Nanoparticles

Table 8.19: Commercially Available Magnetic Nanoparticles (Approved or in Clinical Trials)

Table 8.20: Clinical Trials Evaluating the Utility of Magnetic Nanoparticles as Diagnostics

Table 8.21: FDA/EMA-Approved Magnetic Nanoparticle-Based Contrast Agents

Table 9.1: Advantages and Disadvantages of Cell-Based Systems

Table 9.2: Comparison of RBCs with other Drug Delivery Systems

Table 9.3: Examples of Therapeutic Enzymes Encapsulated in Carrier RBCs

Table 9.4: Clinical and Experimental Therapies using MSCs for Neural-Related Diseases

Table 10.1: Advantages and Disadvantages of Nucleic Acid/Peptide Carriers

Table 10.2: LHRH Agonists and New Generation Agonists Available in the Market

Table 10.3: Peptide Receptors having Potential in Cancer Therapy

Table 10.4: Types and Examples of Cell-Penetrating Peptides

Table 10.5: Peptides Applied in Cancer Diagnosis

Table 10.6: Examples of Peptides Applied in Treating Cancer

Table 10.7: Peptide-Based Vaccines in Development



Table 10.8: The Lone Approved Aptamer and other Aptamers in Development

Table 11.1: Current Targeted Drug Delivery Technologies for Cancer

Table 11.2: Categories and Examples of Tumor Antigens

Table 11.3: Examples of FDA-Approved Targeted Cancer Therapies

Table 11.4: Selected Cancer Therapies in Late Stage Development

Table 11.5: A Representative List of Naked mAbs

Table 11.6: Representative List of Conjugated mAbs

Table 11.7: Approved Antibody ARCs and ADCs

Table 10.8: Representative List of Bispecific mAbs (bsAbs)

Table 11.9: mAbs by Indication Area

Table 11.10: Late Stage mAb Biosimilar Development Activity

Table 11.11: Number of Biosimilars of Monoclonal Antibodies in Development

Table 11.12: Ocular Applications of Dendrimer Drug Delivery Systems

Table 11.13: Applications of Liposomes for Ocular Diseases

Table 11.14: List of Micellar Formulation of Ocular Drugs for Ocular Drug Delivery

Table 11.15: Viral and Non-Viral Systems for Ocular Delivery of Genes

Table 11.16: Different Types of Drug Delivery Methods for CNS Protection

Table 11.17: Drug Delivery Approaches and Drug Molecules for Brain

Table 11.18: Examples of Nanoparticles (NPs) used for Delivery of Drugs across BBB

Table 11.19: Examples of Clinically-Approved NPs Therapeutics for CNS Disorders

Table 11.20: Examples of Nanoparticle-Based Therapeutics for CNS in Clinical Trials

Table 11.21: Examples of Drugs Delivered through PAMAM Dendrimers for CNS

Table 11.22: Liposomes for Antimicrobial Drug Delivery

Table 11.23: Polymeric Nanoparticles for Antimicrobial Drug Delivery

Table 11.24: Solid Lipid Nanoparticles for Antimicrobial Drug Delivery

Table 11.25: Dendrimers for Antimicrobial Drug Delivery

Table 11.26: Examples of Contrast-Enhancing Nanoparticles for Cardiovascular Imaging

Table 11.27 Therapeutic and Theranostic Nanoparticles for CVD

Table 11.28: Nano-Based In vivo CVD Sensors

Table 11.29: Examples of Drugs used for Pulmonary Delivery using Colloidal Carrier Self-Assembling Systems

Table 11.30: Examples of Polymers for Colloidal Pulmonary Drug Delivery Systems

Table 11.31: Examples of Nebulizers with Novel Technologies

Table 11.32: Novel Dry Powder Inhalers Launched in the Past Decade

Table 11.33: Different API Molecules Incorporated into Different Nanoparticle Systems for Pulmonary Application

Table 11.34: Various Nano-Based Cosmeceutical Products in the Market

Table 12.1: Examples of Sustained Release Delivery Systems Studied in Glaucoma-

## Induced Preclinical Models

Table 12.2: Examples of Sustained Release Delivery Systems for Glaucoma that are Under Clinical Development

Table 12.3: Examples of FDA-Approved Ocular Drug Delivery Implants

Table 12.4: Delivery Systems Suitable for Sustained Trans-Scleral Drug Delivery for Retinal Disorders

Table 12.5: Examples of Drug Eluting Stents Available in the Market

Table 12.6: An Additional List of Polymer-Coated Stents

Table 13.1: Global Nanomedicines Market, Through 2021

Table 13.2: Global Nanomedicines Market by Therapeutic Area, Through 2021

Table 13.3: Global Targeted Drug Delivery Market, Through 2021

Table 13.4 Global Market for mAbs by Geography

Table 13.5: Global Market for Top Selling mAbs by Company, Class and Revenue Through 2021

Table 13.6: Global Market for Nano-Based Targeted Drug Delivery Market by Type, Through 2021

Table 13.7 Nanoparticles used in the Formulation of Ocular Drugs

Table 13.8: Liposomes used in the Formulation of Ocular Drugs

Table 13.9: Dendrimers Investigated for Ocular Drug Delivery

Table 13.10: Global Market for Ocular Drug Delivery, Through 2012

Table 13.11: Global Market for Ocular Drug Delivery by Geography, Through 2012

Table 13.12: Global Market for Drug Eluting Stents, Through 2021

Table 13.13: Global Market for Pulmonary Drug Delivery Technologies, Through 2021

Table 13.14: Global Market for Pulmonary Drug Delivery Technologies by Geography, Through 2021

Table 13.15: Hydrogel Systems with Polymers Examples for Oral Drug Delivery

Table 13.16: Examples of PEGylated Nanocarriers Studied in Rodent Models

Table 13.17: Cyclodextrins for Oral Drug Delivery

Table 13.18: Drugs Tested with Cyclodextrins for Rectal Delivery

Table 13.19: Drugs Tested with Cyclodextrins for Nasal Delivery

Table 13.20: Drugs Tested with Cyclodextrins for Transdermal Delivery

Table 13.21: Drugs Tested with Cyclodextrins for Ocular Drug Delivery

Table 13.22: Drugs Tested with Cyclodextrins for Controlled Drug Delivery

Table 14.1: Ablynx's Clinical Programs

Table 14.2: Aciont's Product Pipeline

Table 14.3: Alchemia's Product Pipeline

Table 14.4: Alkermes' Product Pipeline

Table 14.5: Alynlam's Product Pipeline

Table 14.6: AmpliPhi's Product Pipeline

- Table 14.7: Angiochem's Product Pipeline
- Table 14.8: AGTC's Product Pipeline
- Table 14.9: Aradigm's Product Pipeline
- Table 14.10: Armagen's Lysogen Storage Disorder Pipeline
- Table 14.11: Armagen's Neurodegenerative Pipeline
- Table 14.12: Arrowhead's Pipeline
- Table 14.13: Asklepios' Product Pipeline
- Table 14.14: Audentes' Product Pipeline
- Table 14.15: Avalanche's Product Pipeline
- Table 14.16: BBB's Product Pipeline
- Table 14.17: BIND Therapeutics' Intellectual Property
- Table 14.18: Camurus' Product Pipeline
- Table 14.19: Celsion's Pipeline
- Table 14.20: Cerulean's Product Pipeline
- Table 14.21: Copernicus' Product Pipeline
- Table 14.22: CureVac's Product Pipeline
- Table 14.23: Discovery Lab's Product Pipeline
- Table 14.24: DURECT's Product Pipeline
- Table 14.25: Ensyce's Product Pipeline
- Table 14.26: Overview of EryTech's Development Projects
- Table 14.27: EryTech's Financial Data
- Table 14.28: Esperance's Product Pipeline
- Table 14.29: Exicure's Product Pipeline
- Table 14.30 GenVec's Product Pipeline
- Table 14.31: Glide's Development Programs
- Table 14.32: Heron's Product Pipeline
- Table 14.33: iCeutica's Pain & Inflammation Product Pipeline
- Table 14.34: iCeutica's Oncology Drug Pipeline
- Table 14.35: iCeutica's Respiratory Drug Pipeline
- Table 14.36: iCeutica's Migraine Drug Pipeline
- Table 14.37: ImmusanT's Product Pipeline
- Table 14.38: InDex's Product Pipeline
- Table 14.39: Immune Design's Product Pipeline
- Table 14.40: Immunocore's Product Pipeline
- Table 14.41: Inovio's Product Pipeline
- Table 14.42: Insight Vision's Product Pipeline
- Table 14.43: Insmed's Product Pipeline
- Table 14.44: Intezyne's Pipeline
- Table 14.45: LipimetiX's Product Pipeline

|   |
|---|
| Table 14.46: LiPlasome's Pipeline   |
| Table 14.47: Lipocine's Product Pipeline                                  |
| Table 14.48: Lipotek's R&D Program  |
| Table 14.49: Madison's Product Pipeline                                   |
| Table 14.50: Mersana's Product Pipeline                                   |
| Table 14.51: Milo's Product Pipeline                                      |
| Table 14.52: miRagen's Product Pipeline                                   |
| Table 14.53: MultiVir's Product Pipeline                                  |
| Table 14.54: Nanocarrier's Product Pipeline                               |
| Table 14.55: Nanotherapeutics' Product Pipeline                           |
| Table 14.56: NanoViricides' Product Pipeline                              |
| Table 14.57: Nektar's Approved Products                                   |
| Table 14.58: Nektar's Product Pipeline                                    |
| Table 14.59: Neos Therapeutics' Product Candidates                        |
| Table 14.60: NOD's Product Pipeline                                       |
| Table 14.61: Oxford Biomedica's Product Pipeline                          |
| Table 14.62: PDS' Product Pipeline  |
| Table 14.63: PharmaIN's Product Pipeline                                  |
| Table 14.64: PhaseRx's Product Pipeline                                   |
| Table 14.65: pSivida's Product Pipeline                                   |
| Table 14.66: Pulmatrix's Product Pipeline                                 |
| Table 14.67: Quark's Pipeline of Products                                 |
| Table 14.68: RaNA's Product Pipeline                                      |
| Table 14.69: RegeneRx's Product Pipeline                                  |
| Table 14.70: Regenxbio's Product Pipeline                                 |
| Table 14.71: Renova Therapeutics' Product Pipeline                        |
| Table 14.72: Replicor's Phase II Proof of Concept Clinical Study Pipeline |
| Table 14.73: Replicor's Regulatory Pipeline                               |
| Table 14.74: RJS Biologics' Product Pipeline                              |
| Table 14.75: Sarfez's Product Pipeline                                    |
| Table 14.76: Savara's Product Pipeline                                    |
| Table 13.77: Serin'a Pipeline   |
| Table 14.78: Silence's Product Pipeline                                   |
| Table:14.79: Silenseed's Product Pipeline                                 |
| Table 14.80: Sylentis' Product Pipeline                                   |
| Table 14.81: Spark's Product Pipeline                                     |
| Table 14.82: Transgene's Product Pipeline                                 |
| Table 14.83: Vect-Horus' Product Pipeline                                 |
| Table 14.84: Vectura's Pipeline Assets                                    |

Table 14.85: Vicas' Product Pipeline  
Table 14.86: Voyager's Product Pipeline  
Table 14.87: WAVE's Product Pipeline  
Table 14.88: Xel's Pipeline  
Table 14.89: Xenetic Biosciences' Product Pipeline  
Table 14.90: Xigen's Product Pipeline  
Table 14.91: Zealand Pharma's Product Pipeline  
Table 14.92: Zozano's Product Pipeline

## **COMPANIES MENTIONED**

3M Company  
Abbott Laboratories  
Ablynx NV  
Aciont Inc.  
Acrux  
Agilis Biotherapeutics LLC  
Aileron Therapeutics Inc.  
Alchemia Oncology Pty Ltd.  
Alkermes Pharma Ireland Ltd.  
Allergan Inc.  
Alnylam Pharmaceuticals  
AmpliPhi Biosciences  
Andros Pharmaceuticals Co., Ltd.  
Angiochem Inc.  
Antares Pharma Inc.  
Aposense Ltd.  
Applied Genetic Technologies Corp. (AGTC)  
Aptagen LLC  
Aradigm Corp.  
ArisGen SA  
Armagen Technologies Inc.  
Arrowhead Research Corp.  
Artificial Cell Technologies Inc.  
AsclepiX Therapeutics LLC  
Asklepios BioPharmaceutical Inc.  
Astellas Pharma Inc.  
Audentes Therapeutics Inc.  
Avalanche Biotechnologies Inc.

Avita Medical Ltd.  
Azaya Therapeutics Inc.  
Bachem Americas Inc.  
Bayer Pharma AG  
BBB Therapeutics BV  
Bespak Europe Ltd.  
Bicycle Therapeutics Ltd.  
BigDNA Ltd.  
BIND Therapeutics Inc.  
BioDelivery Sciences International Inc.  
Bioject Medical Technologies Inc.  
BioZone Laboratories Inc.  
Camurus AB  
Celsion Corp.  
CeramiSphere Pty Ltd.  
Cerulean Pharma Inc.  
Chrysalis BioTherapeutics Inc.  
Copernicus Therapeutics Inc.  
Cornerstone Pharmaceuticals Inc.  
CureVac AG  
CytImmune Sciences Inc.  
DepoMed Inc.  
Dicerna Pharmaceuticals  
Dimension Therapeutics Inc.  
Dipexium Pharmaceuticals Inc.  
Discovery Laboratories Inc.  
DURECT  
EnGeneIC Ltd  
Ensysce Biosciences Inc.  
EryDel SpA  
EryTech Pharma  
Esperance Pharmaceuticals Inc.  
Exicure Inc.  
FIT Biotech Oy  
Flamel Technologies S.A.  
Generex Biotechnology Corp.  
Genetic Immunity Inc.  
Genus Pharmaceuticals Ltd.  
GenVec Inc.

GlaxoSmithKline LLC  
Glide Pharmaceutical Technologies Ltd.  
Heron Therapeutics Inc.  
Hoffmann-LaRoche Inc.  
ICB International Inc.  
iCeutica Inc.  
ImmusanT Inc.  
InDex Pharmaceuticals AB  
Immune Design  
Immunocore Ltd.  
Inovio Pharmaceuticals  
Insite Vision Inc.  
Insmed Inc.  
Intezyne Technologies Inc.  
Keystone Nano Inc.  
Kowa Pharmaceuticals America Inc.  
LipimetiX Inc.  
LiPlasome Pharma ApS  
Lipocine Inc.  
Lipotek Pty Ltd.  
Living Cell Technologies Ltd.  
MagForce AG  
Mankind Pharma Ltd.  
Mersana Therapeutics Inc.  
Micochips Biotech Inc.  
Milo Biotechnology LLC  
miRagen Therapeutics Inc.  
Mirna Therapeutics Inc.  
Miros Polymers Inc.  
Moderna Therapeutics Inc.  
MultiVir Inc.  
Mystic Pharmaceuticals Inc.  
Nanobiotix  
Nanocarrier Co., Ltd.  
Nanocopoeia Inc.  
NanoMedical Systems Inc.  
NanoOncology Inc. (PeptiMed Inc.)  
Nanospectra Biosciences Inc.  
Nano Precision Medical Inc.

Nanotherapeutics Inc.  
nanoTherics Ltd  
Magnefect System  
NanoVector Inc.  
NanoViricides Inc.  
Nektar Therapeutics  
Neos Therapeutics Inc.  
NeXstar Pharmaceuticals Inc.  
NightstaRx Ltd.  
NOD Pharmaceuticals Inc.  
Nordic Nanovector ASA  
Novagali Pharma S.A.  
Novasorb Technology  
Novartis Pharmaceuticals Corp.  
Ocular Therapeutix Inc.  
Oncolytics Biotech Inc.  
Oxford Biomedica plc  
PDS Biotechnology Corp.  
PharmaIN Corp.  
PhaseRx Inc.  
Phico Therapeutics Ltd.  
PolyActiva Pty Ltd.  
PolyTherics Ltd.  
Presage Biosciences Inc.  
pSivida Corp.  
Pulmatrix Inc.  
Quark Pharmaceuticals Inc.  
Ra Pharmaceuticals Inc.  
RaNA Therapeutics Inc.  
RegeneRx Biopharmaceuticals Inc.  
Regenxbio Inc.  
Renova Therapeutics Inc.  
Replicor Inc.  
RetroSense Therapeutics LLC  
Rexahn Pharmaceuticals Inc.  
RJS Biologics LLC  
Roche Holding AG  
Sarfez Pharmaceuticals Inc.  
Savara Inc.



Scintipharma Inc.  
Sequus Pharmaceuticals Inc.  
Serina Therapeutics Inc.  
Serpin Pharma LLC  
Silence Therapeutics PLC  
Silenseed Ltd.  
Sylentis SA  
SoluBest Ltd.  
Spark Therapeutics  
Spheringenics Inc.  
Suda Ltd.  
Supratek Pharma Inc.  
Taiwan Liposome Co. Ltd.  
TheraSource LLC  
Transgene SA  
Valeant Pharmaceuticals International Inc.  
Efudex  
Vect-Horus S.A.S.  
Vectura Group plc  
Vical Inc.  
Voyager Therapeutics Inc.  
WAVE Life Sciences Pvt. Ltd.  
Xel Pharmaceuticals  
Xenetic Biosciences  
Xigen SA  
Zealand Pharma AS  
Zozano Pharma Corp

## I would like to order

Product name: Advanced and Targeted Drug Delivery Market Segmentation, Analysis & Forecast to 2021 Nanoparticles, Polymers, Liposomes, Micelles, Nanoemulsions, Dendrimers, Monoclonal Antibodies by Geography, Therapeutic Area and Stakeholder Environment

Product link: <https://marketpublishers.com/r/AD035579CE0EN.html>

Price: US\$ 3,800.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/AD035579CE0EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:  
Last name:  
Email:  
Company:  
Address:  
City:  
Zip code:  
Country:  
Tel:  
Fax:  
Your message:

**\*\*All fields are required**

Customer signature \_\_\_\_\_

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below

and fax the completed form to +44 20 7900 3970