

Drug Delivery Technology: Revolutionizing Cancer Therapies

Use the incisive analysis, commentary, opinions and forecasts provided in this note to:

- gain an in-depth understanding of the technology landscape for active & passive targeting platforms, including injectable & oral systems
- assess the options available for delivering anticancer compounds now & in the future
- gauge the current & future technology requirements of pharma & biotech companies developing oncology products
- analyze how the market is evolving & the influence that drug delivery may have on pharma oncology pipelines
- identify key pharma & delivery companies focusing on the improved delivery of existing & novel anticancer agents
- highlight alliances between delivery companies & pharma, and recent market activity
- evaluate where progress has been made in the delivery of potential new oncology products



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KEY FINDINGS:

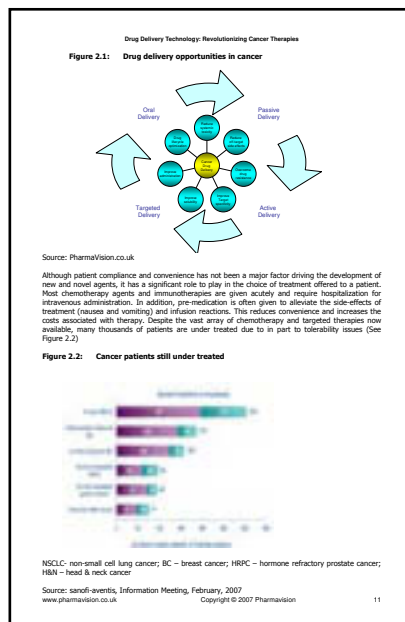
- 2006 global oncology market worth nearly US\$33 billion
- attracted attention of big pharma players such as AstraZeneca, BMS, Lilly, GSK, Merck Serono, Novartis, Pfizer, Roche/Genentech, sanofi-aventis & TAP
- >650 products in clinical development however; 4 key challenges remain - ensuring efficient drug delivery, avoiding systemic toxicity & resistance, and improving specificity
- Analysis of historic (2000-2005) market trends of the oncology pharmaceutical sales and advanced drug delivery sales.
- Forecasts for near-term (2006-2012) and the future (2020) market growth assessed based on the technology platforms evaluated in the report.
- Plus, sales forecasts for approved and pipeline oncology products used as a basis for our oncology drug delivery sales (ODDS) forecasts.
- Drug delivery companies applying a plethora of platforms, including passive and targeted systems, to overcome the above challenges.
- Increasingly multifunctional systems being applied to overcome pharmacodynamic issues and targeted delivery in a single solution.
- Many revamped products will reach the market over the next 6 years, driving future market growth. Their success is analyzed in detail and case studies provided to highlight the progress of each technology.
- As the oncology market evolves and patients are diagnosed and treated earlier during the course of the disease, both in the post-adjuvant and neo-adjuvant setting, the need for oral agents will grow. Several drug delivery companies are working towards this goal including: Access, ALZA, Emisphere and Labopharm. Each has adopted a different strategy and all are analyzed in detail.

Introduction

“One of the biggest issues with current cancer therapies is that whilst most therapies procure quality of life they kill both healthy and tumor cells. This offers drug delivery specialists one of the greatest challenges and opportunities to increase the therapeutic index and ultimately deliver targeted therapies to cancer cells whilst minimizing off-target side effects.” Dr Cheryl Barton.

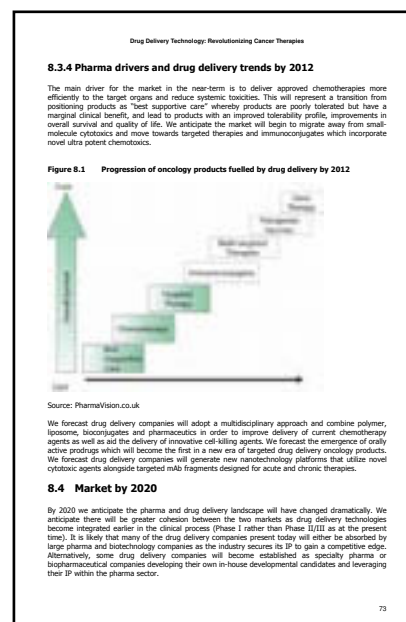
The burden of disease cancer puts on society is huge. In 2000 it was estimated that over 10 million people were diagnosed with cancer worldwide and global incidence is expected to grow to 15 million by 2020 (source: WHO). It is the second leading cause of death in the US and results in overall costs of more than US\$210 billion annually.

Whilst significant advances have been made in the treatment of many cancer subtypes, the therapies currently available often require regular visits to the hospital or clinic to receive radioactive therapy or intravenous chemotherapy which are highly toxic, may lead to drug resistance and are poorly tolerated due to limited-tumor specificity leading to many unwanted side-effects and poor compliance.



Whilst the pharmaceutical industry continues to find innovative ways to treat cancer, drug delivery specialists have the task of making sure those treatments reach the correct site in the body in the required quantities and at the right time. The Holy Grail in delivering cancer therapies is the development of a technology platform which targets the therapy only to the tumor, leaving nor-

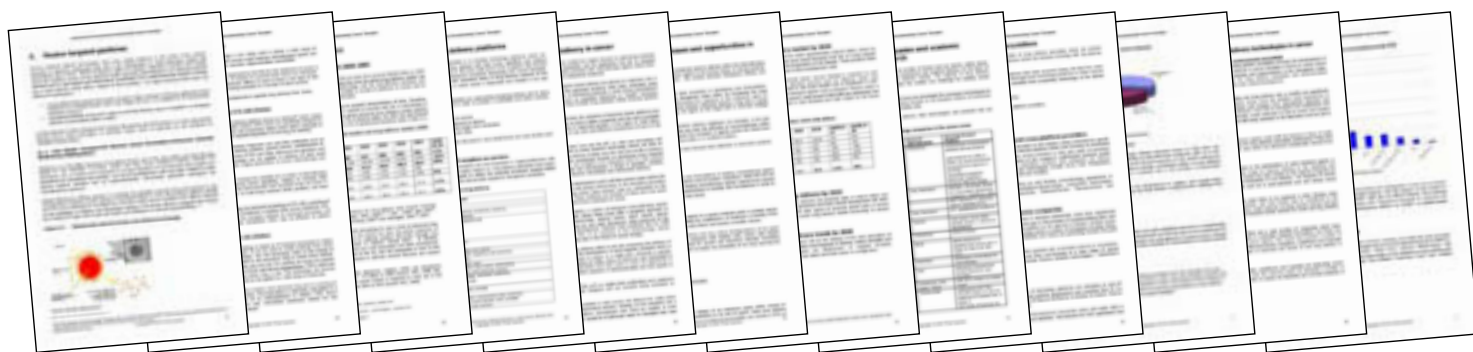
SAMPLE PAGES



mal cells undamaged. In an ideal world, orally active targeted therapies would be available.

The following report summarizes some of the latest developments in cancer drug development and analyzes some of the most promising solutions which drug delivery companies are providing in order to address this unmet clinical need.

SAMPLE PAGES FROM THE REPORT



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EIGHT QUESTIONS THIS NOTE ANSWERS:

1. How will the drug delivery technology drivers change in the cancer arena in the next decade and beyond?
2. What are the key delivery technologies in the oncology field?
3. When are products which utilise these key delivery technologies likely to reach the market?
5. Which companies are the winners in each technology category?
6. How are drug delivery technologies evolving to meet the demands of the oncology market?
7. Where are the market opportunities now and in the future?
8. What do we predict will be the value of the cancer drug delivery market each year until 2012, in 2015 and in 2020?

COMPANIES MENTIONED:

Ablynx, Abraxis BioSciences, Access Pharmaceuticals, Acusphere, Adherex, Adhesives Research, AlphaVax, ALZA, Amgen, AstraZeneca, Avidimer Therapeutics, BioDelivery Sciences International, BioProgress, BioVation, Bristol-Myers Squibb, Cell Therapeutics, Cephalon, Corixa, Daiichi, Debiopharm, DelSite Biotechnologies, Delth Systems, Dianisco, Diatos, DOR BioPharma, Eli Lilly, Emisphere Technologies, Enzon Pharmaceuticals, Expression Genetics (EGEN), Genencor, Genentech, Genex Biotechnology, GSK, Guilford, Hana Biosciences, Hammi Pharmaceuticals, MIT, IDEA, ImClone, INEX Pharmaceutical, Inovio BioMedical Corporation, Institut Pasteur, Labopharm, Light Sciences, Lipoxen, MaxCyte, Merck Serono, Millennium, Miravant, Mountain View Pharmaceuticals, Murus, Nektar Therapeutics, NeoPharm, Neurotech, Nippon Kayaku, Nitto Denko Technical Corporation, NOF Corporation, Norwood Immunology, Novartis, Oakwood Laboratories, OctoPlus, Pfizer, PG-XTL, Protherics, QLT Inc, Roche, sanofi-aventis, Schering AG, Seattle Genetics, SkyePharma, Sonus Pharmaceuticals, Starpharma, SunBio, Supratek, TAP, UCB, Valentis, Valera Pharmaceuticals, Ventaria Pharmaceuticals, Wyeth

About the author:



Dr Cheryl Lee Barton graduated from Queen's University Belfast in 1993 with a doctorate from the department of Biochemistry and Biology. This three-year project involved the characterization

of novel proteins in parasites and hosts as potential targets for drug development. During this period, Cheryl was offered a sabbatical at Merck Sharp and Dohme's Neuroscience centre in Harlow, Essex, UK, to develop assays for protein identification.

It was the success of this placement which led Merck to offer Dr Barton a two year post-doctorate and later a permanent position which after seven years saw Cheryl managing a specialist team of biochemists and behavioral pharmacologists who became responsible for evaluating safety assessment candidates in pre-clinical drug development. The primary projects ranged from Alzheimer's disease to Stroke and latterly Depression to Schizophrenia.

In 1999, Dr Barton was head-hunted away from Industry into the Dutch Investment Bank ABN Amro N.V to join their team

of pharmaceutical researchers as a senior equity analyst in London. Whilst there, Cheryl became the lead analyst on AstraZeneca, Roche and Sanofi-Synthelabo and was responsible for writing thematic research notes, evaluating new drugs in development and assessing their potential impact on Pan-European stocks.

In 2002, Dr Barton established the consultancy PharmaVision.co.uk to provide independent, tailor-made, pharmaceutical thematic research to investment houses, competitive intelligence specialists and pharmaceutical companies.

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