

NEUROTHERAPEUTICS AND GENE AMPLIFICATION Markets Predicted to Grow

Unmet need and ballooning incidence are expected to create huge market potential in neurological drugs, according to a study by Kalorama Information. The world market stands at \$70 billion, but steady growth in demand and product introduction will result in markets in excess of \$88 billion by 2010.

The study, The World Market for Neurotherapeutic Drugs, revealed that although neurological cancer currently presents the largest defined segment of neurotherapeutics, the largest area of opportunity is in peripheral neuropathies, which has been hindered in its development by lack of definition and failure to diagnose. The market potential for pharmaceuticals in the treatment of peripheral neuropathies represents \$15 billion

in the seven major world healthcare markets and this market is growing at the compound annual rate of 6.3%.

In a separate Kalorama study, applications and revenue are expected to continue to expand for gene amplification technologies.

The study found that total revenue for the top 10 amplification technologies will grow by more

than 50% from their current levels to surpass \$1.6 billion in 2007.

The study, Gene Amplification Technologies: End Users, Marketers, and Markets, also found that although the polymerase chain reaction has long been the dominant technology in the field, it is no longer the only one deriving significant revenue.

According to the report, several other techniques, including Rubicon Genomics' OmniPlex, Becton Dickinson's SDA, Abbott Laboratories' and ImClone's LCR, and Digene's Hybrid Capture, are growing at double-digit rates and making progress in specific applications.

The study also surveyed the attitudes of end-users working with amplification techniques and found that researchers are beginning to use different technologies for some applications, but the lack of robust technical trouble-shooting experience was a major drawback for many non-PCR techniques.

Direct-to-Consumer Advertising IMPROVES PHYSICIAN/PATIENT RELATIONSHIP

Physicians report that direct-to-consumer advertising can be an important and productive part of the office visit, enhancing the quality of physician/patient visits, according to a study sponsored in part by Market Measures/Cozint. These new study findings are important because both patients and physicians believe that a strong doctor-patient relationship is critical to patient health. The study was funded by Pfizer Inc., and is part of an ongoing research effort into the physician-patient relationship.

Benefits of DTC advertising, according to surveyed doctors, include prompting doctor visits among appropriate patients, increasing receptivity to treatment, and leading to more thorough discussions about their healthcare options.

The study also revealed that almost 70% of physicians do not feel pressure to prescribe medications requested by patients who saw a DTC advertisement. Additionally, the report found that more than 80% of physicians said the drugs discussed were appropriate for the patients.

The Market Measures/Cozint study is based on

PHYSICIANS DISCUSS BENEFITS OF DTC

According to a survey, sponsored by Pfizer Inc., physicians responded positively to DTC advertising.

72% of physicians treating high cholesterol conditions and **76%** of physicians treating mood/anxiety disorders find the drug inquiry in which advertising was mentioned to be a valuable part of the office visit.

85% of physicians treating high cholesterol conditions and **83%** of physicians treating mood/anxiety disorders report that the drug discussed was appropriate for the patient.

Almost **70%** of physicians treating both high cholesterol conditions and mood/anxiety disorders feel little or no pressure to prescribe a product that was requested.

54% of physicians treating high cholesterol conditions and **55%** of physicians treating mood/anxiety disorders agree that the ad was influential in getting the patient to discuss their condition with a medical professional.

For both high cholesterol conditions and mood/anxiety disorders, **80%** or more of physicians were satisfied with the outcome of office visits where ads were mentioned.

more than 400 actual physician/patient visits. Interviews were conducted with primary-care physicians and cardiologists treating high-cholesterol conditions, as well as psychiatrists and primary-care physicians treating mood/anxiety disorders. By measuring actual behavior, this research gives new support to the benefits of DTC advertising on the physician-patient relationship. This study is the first of its kind that addresses the impact of DTC advertising based on actual physician-patient visits.

"The majority of physicians participating in the study report that patients are more receptive to therapy — including more likely to be compliant — when they receive a drug they requested," says Rob Sederman, executive VP of portfolio management and corporate strategy at Market Measures/Cozint. "But are the drugs patients are asking about appropriate? More than 80% of doctors say yes: DTC is not only influential in driving patients to discuss their conditions with medical professionals, it also guides them in inquiring about suitable medications — leading to more thorough and valuable discussions."

While some surveyed physicians acknowledge that DTC advertising may have a negative effect on office visits, more than four times as many physicians, or 61% of doctors, consider DTC ads to play a beneficial role in the physician/patient interaction.

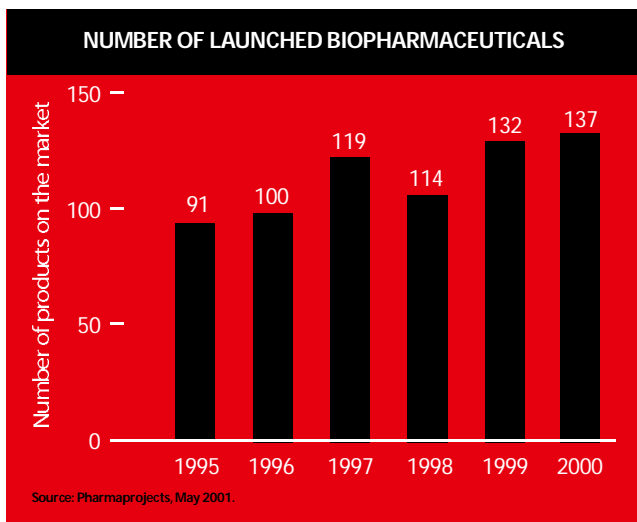
When asked to describe the beneficial effects of patient awareness of DTC ads on their interaction with patients, doctors reported that DTC ads inform and educate patients and increase patients' receptivity to discussing treatments.

Physicians also reported that DTC often leads to more thorough discussions on subjects such as suitable products, efficacy, and side effects.



"DTC advertising can go beyond fostering more productive physician/patient interactions in the office to improving actual treatment outcomes," says Rob Sederman.

**THE WORLD
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Biotech Companies Continue to be **STANDARD BEARERS FOR INNOVATION**

The biotechnology industry, which has doubled in size during the past decade, is expected to experience faster progress following the initial sequencing of the complete human genome and the move to the new frontiers of proteomics.

A Scrip Reports study found that the U.S. biotech market is the world leader, with revenue of \$22.4 billion in 2000. In comparison, the European biotech market is currently valued at \$8.2 billion.

According to the market research study, more than 137 biopharmaceuticals already have been launched worldwide and more than 400 biopharmaceutical medicines are in clinical trials that address more than 200 diseases, such as AIDS, cardiovascular disease, diabetes, arthritis, and various types of cancer.

Although biotech companies have become less reliant on big pharma, the study finds that the relationship between the two still is strong.

In a separate study by Scrip Reports, enabling technologies are viewed to be the key way to address bottlenecks in the drug-discovery process. The report notes that the pharmaceutical industry is information rich and compound poor. This difficulty in translating R&D investment into marketable, clinically useful drugs affects the finances of the industry. The report predicts that enabling technologies, including genomics, proteomics, bioinformatics, chemoinformatics, and high-throughput screening, may be able to deliver the number of new drug candidates that the industry will need to remain profitable.

This case is supported by the fact that the number of new drugs entering clinical trials is decreasing, while the average cost of bringing a new drug to market has risen to more than \$800 million, and that only three drugs were approved in the first five months of 2002.

Reports Reveal **MOST-ESTEEMED COMPANY**, Views on the **INTERNET**, and **DISCOUNT-DRUG PROGRAMS**

Physician assistants, nurse practitioners, and pharmacists have named Pfizer Inc. the most-esteemed pharmaceutical firm, according to the new Pharmaceutical Company Image 2002 study by Verispan. Pfizer also was the company

most esteemed by physicians, reports the biennial study.

Second place among physician assistants and nurse practitioners was earned by GlaxoSmithKline, which ranked above Merck in each category. Schering-Plough, Aventis, and Novartis moved into or within the top 10 for physician assistants, while Aventis, AstraZeneca, and Novartis did so for nurse practitioners.

Among pharmacists, Merck placed second, Eli Lilly third, and GlaxoSmithKline fourth. Abbott Laboratories improved its standing with pharmacists, rising from 14th in 2000 to seventh.

The Pharmaceutical Company Image 2002 study also found that while the pharmaceutical industry is using the Internet as a promotional tool more often, physicians and other healthcare practitioners say they still prefer more traditional sources of information.

Results indicate that physicians continue to find medical conferences/symposia and articles in medical journals to be the best sources of information on pharmaceutical products. Sales reps also remain an important source of information for doctors.

Conferences and symposia sponsored by medical organizations were noted by physician assistants and nurse practitioners as their favorite sources of

drug information. However, pharmacists are more likely than other audiences to use medical reference books and the Internet for drug information.

The study also examined drug-discount card programs and found that the programs are popular with all of the audiences who were asked about them, although respondents were not overwhelmingly impressed with the pharmaceutical companies' efforts in this area.

Biopharmaceutical Companies Face **THREE CHALLENGES TO UNLOCK THE R&D POTENTIAL OF INFORMATICS**

Spending on informatics for research in the biopharmaceutical industry is expanding overall industry R&D spending, but to capture the potential value of this spending, companies must address three interrelated managerial challenges —

develop an explicit R&D strategy, address the key challenges of technology management, and comprehend the complex challenges of organizational adaptation and change.

"We estimate that informatics spending represents approximately 7% of the total biopharmaceutical R&D budget, and it is growing at a compound annual growth rate faster than R&D spending as

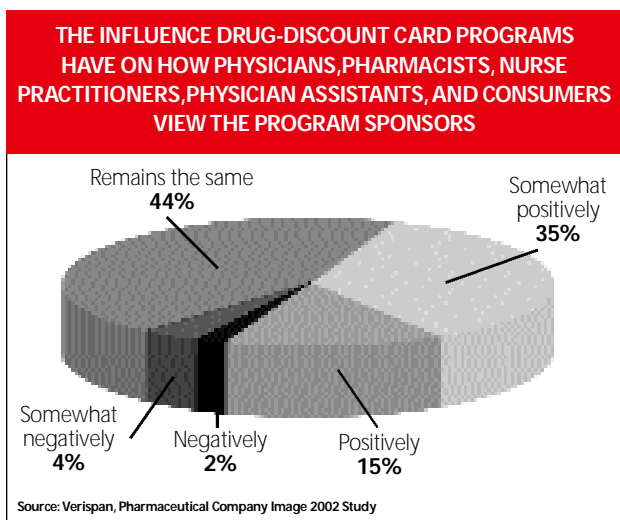


whole," says Charles-Andre Brouwers, VP and director of The Boston Consulting Group's New York office. "The challenge will be to manage these R&D dollars in a way that improves research productivity."

The first of the three interrelated managerial challenges is to develop an explicit R&D strategy — one that includes informatics.

"Pharmaceutical companies must carefully choose their areas of research focus, decide the role of informatics in those areas, know how to manage the risks, and take a portfolio approach to managing their informatics investments," Mr. Brouwers says.

Secondly, Mr. Brouwers says,



companies at the same time must address the key challenges of technology management, this includes developing the ability to continually assess the maturity of fast-evolving technologies and to know when it's time to shift from experimentation to implementation.

According to Mr. Brouwers, the third challenge pharmaceutical companies face is the complex challenge of organizational adaptation and change, which means rethinking basic decision-making processes in the R&D organization, providing new incentives for information capture and sharing, and integrating new kinds of expertise into the traditional R&D skill sets.

PATIENT BENEFITS DRIVE GROWTH in Computer-Assisted Surgery

Growth in the market for devices and systems related to computer-aided surgery (CAS) is being driven in part by the gains realized in patient benefits, according to the August 2002 issue of MedMarkets.

"Gains in this \$600 million market are expected to be substantial, and the market will likely reach \$2.6 billion by 2010," says Patrick J. Driscoll, publisher of MedMarkets. "CAS is directly driving procedure growth, especially for minimally invasive procedures, and is driving growth in the market for virtual reality training systems and pre-operative planning, as well as for intra-operative visualization."

The largest CAS segment, which also is growing, is for systems and equipment related to medical imaging and computer-aided diagnosis.

The companies involved in this industry are myriad, including Analyze Direct, Bioluminate, Bonecraft, BrainLAB, CASurgica, CARCAS Group, Cedera, Given Imaging, The Interventional Centre, Intuitive Surgical, Invivo Research, Interactive Visualization Systems, Karl Storz, Khoral Research, MISON, Motion Analysis, Olympus America, Stryker, Vasamedics, Vista Medical Technologies, Vaytek, and Volume Interactions.

Related market segments are growing as well, including image processing and display, robotics and instrument guiding systems, surgical simulation and education, computer-assisted therapy, and operating room management and telemedicine.

Testing for Disease Susceptibility Plays Part in POST-GENOMIC DIAGNOSTIC REVENUE

Disease susceptibility testing will account for one-third of the total post-genomics diagnostics revenue for 2002, according to a report from Decision Resources Inc. The study, Post-Genomics Diagnostics,

has found that combined sales of post-genomics disease susceptibility, prognosis, and monitoring assays will account for 90% of the 2002 total market. Additionally, the report finds that the use of pharmacogenomic and diagnostic assays are projected to grow quickly, and by 2007 they are expected to account for 53% of the market.

"The push to commercialization is relatively strong considering the immaturity of the post-genomics diagnostics field; in fact, few products are currently marketed," says Tracy DeGregorio, director of DR Reports at Decision Resources. "If technology-based companies hope to generate operating revenue in the next five years, they will have to climb the value chain."

The report also revealed that genomic sequence and mapping information from

the Human Genome Project and Genome Era technologies has facilitated the emergence of post-genomics diagnostics. DNA microarrays were found to occupy a prominent position among these technologies and have yielded new approaches to disease diagnosis because they compare both patterns of gene expression and genotypes in healthy versus diseased individuals. These expression studies promise to deliver new diagnostic markers in much greater abundance and with much better quality than was possible in the pre-genomic era, in addition to yielding a host of new target molecules for drug discovery. Major segments of the post-genomics diagnostics industry include diagnostic assays, disease prognosis and monitoring assays, drug response prediction testing, disease susceptibility testing, and genetic screening for polygenic disorders.



According to Tracy DeGregorio, director of DR Reports at Decision Resources, the genomics market has become more exciting as scientists are finding ways to determine, based on the genetic make-up of a person, disease susceptibility.

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