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### **In Focus: Eradication of Polio from India**

#### **Over view**

Polio is an extremely contagious viral disease that's transmitted through fecal matter. Transmission occurs through contact with contaminated water, food or people. The symptoms and severity of this disease can vary and depend on the type of polio infection. Polio epidemics have crippled thousands of people, mostly young children, the disease has caused paralysis and death for much of human history. Polio had existed for thousands of years quietly as an endemic pathogen until the 1880s, when major epidemics began to occur in Europe, widespread epidemics appeared in the United States. Poliomyelitis, often called polio or infantile paralysis, is an acute viral infectious disease spread from person to person, primarily via the fecal-oral route. UNICEF has key communication and social mobilization responsibilities in the endemic countries and also in effectively responding to outbreaks

#### **Vaccination for Polio**

Oral polio vaccine is highly effective and inexpensive (about US\$0.10 per dose, or US\$0.30 per child and its availability has bolstered efforts to eradicate polio. Because the immune response to oral polio vaccine is very similar to natural polio infection, it is expected that oral polio vaccination provides similar lifelong immunity to the virus. Contact immunity to polio can occur when attenuated poliovirus derived from the oral polio vaccine is excreted, and infects and indirectly vaccinates unvaccinated individuals.

#### **Global Scenario**

In India is nearly polio free the Progress has been made by coordinated efforts to increase the percentage of children fewer than 5 immunized. By the end of last year, 33 out of India's 35 states were polio free with only 32 cases reported so far in 2010 the Global Polio Eradication Initiative. Efforts to immunize migrant workers in their home states began last year in Punjab, Haryana, Gujarat and West Bengal. The Immunization campaigns is coincide with peak travel times and are even held at railway junctions and roads, helping to increasing the percentage of children reached from 78% in 2008 to 92% last year. Uttar Pradesh is a densely populated state with high birth rates and sanitation issues.52 caeses of polio have been reported so far in Pakistan this year

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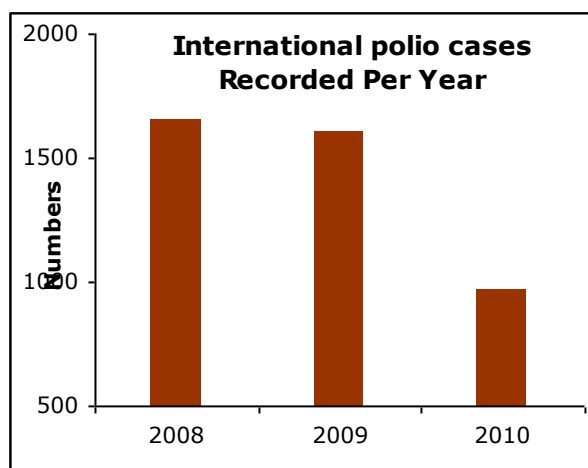
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### Current Scenario

In 1988, the World Health Assembly the governing body comprising all Member States of the World Health Organization, resolved to launch a global initiative to eradicate polio. The Global Polio Eradication Initiative is financed by governments, private foundations, development banks, humanitarian organizations, nongovernmental organizations and corporate partners between 1988 and 2010, donors invested US\$ 10 billion in polio eradication. The largest funding sources are not from the international public-sector development community, but from private contributions (accounting for 25% of confirmed contributions) and domestic contributions (accounting for 23% of contributions). The projects that are estimated US\$ 208 million since September 2010 have reduced the 2011-2012 funding gap to US\$ 820 million. The most pressing requirement is for flexible funding for surveillance, technical assistance and outbreak response. The increase is driven notably by India of programme support costs for budget lines expected to be covered through WHO and UNICEF to more accurately reflect the complete budget.

### Recent Polio Cases registration internationally

In 2010 8 February 2011, 966 cases of polio have been reported. Reported cases of polio are down 95% in Nigeria and 94% in India compared to the previous year, with little change in Afghanistan (from 38 to 25 cases) and an increase in cases in Pakistan (from 89 to 144 cases). Nearly half (458) of 950 cases were reported from an acute outbreak in Tajikistan, which was associated with a further 18 cases across Central Asia and the Russian Federation, with the most recent case from this region being reported from Russia on the 25th September. 540 cases of acute flaccid poliomyelitis, most without a stool sample. Only 50 have so far been confirmed as poliomyelitis is under way. At least 179 deaths have so far been associated with this outbreak, which is believed to have been an



Sources; Cygnus market Resources

importation from the ongoing type 1 outbreak in Angola and the Democratic Republic of the Congo (93 cases so far this year). The Red Cross and the United Nations started a major campaign in March to eradicate polio in west and central Africa, targeting 85 million children. Angola was a primary concern, as was the DRC Congo, which had experienced importation from Angola both in the southwest and in the southeast.

Polio teams also provide awareness and training for the National Immunization Days (NID), which are the main way children received vaccine. During the February 2010 NID, an estimated 90,000 immunization teams vaccinated about 35 million children against polio. The round was announced by community dialogues, SMS text messages providing logistical information, televised public service announcements and over 100 journalists were trained in health issues in the Federally Administered Tribal Areas

### Indian Scenario

Govt want to eradicate polio disease from India. For lthis, it starts pulse polio programme to give immunization to all the children 0-5 years, twice in a year free of cost. This was showing good results in eradicating polio disease. The mass pulse programme, all the govt, non govt, social service, NGOs are involved to give polio drops to all the children in India. Polio camps were conducted in all the places like Railway stations, Bus Stands, Air ports and all public places to give polio drops to the children on the same day. Rural areas are also covered by these agencies to give polio drops to the children.

**Dosage:** 2-3 drops of oral vaccine give to all the children age between 0-5 years twice in a year.

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**Outlook**

Govt of India is committed to eradicate the polio disease from India. The pulse polio programme is showing very good results and registered polio cases were drastically reduced for the last 5 years. Some states like Kerala and Manipur are declared polio free states in 2008. Many states are registered nil polio cases in last three years. In coming years with the help of all health care professionals and govt commitment, India may become polio free country.

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## News Briefs

### MARKETING

#### Americas

#### USA: School-Based Program Helps Adolescents Cope with Asthma

A school-based intervention program designed for adolescents with asthma significantly improves asthma management and quality of life for the students who participate, and reduces asthma morbidity, according to researchers in New York City, who studied the effect of the program aimed at urban youth and their medical providers. The Asthma Self-Management for Adolescents (ASMA) program is eight-week intervention geared towards helping adolescents learn more effective ways of managing their symptoms and controlling their asthma. The research findings indicate ASMA is effective in improving asthma self-management and in reducing asthma morbidity and urgent health-care use in low-income, urban minority adolescents.

#### USA: Blood Protein Test Can Detect Structural Heart Disease and help in Predicting risks

The protein "cardiac troponin T" (cTnT), which can be detected in a blood test, is linked to structural heart disease and a higher risk of premature death from any cause, according to researchers from the University of Texas Southwestern Medical Center. Highly sensitive assay for cTnT has been developed that detects levels approximately 10-fold lower than those detectable with the standard assay. In patients with chronic heart failure and chronic CAD, circulating cTnT is detectable in almost all individuals with the highly sensitive assay, and higher levels correlate strongly with increased cardiovascular mortality

#### USA: Drug-Treatment Opportunities in Advanced Ovarian Cancer will be Limited

Decision Resources, one of the world's leading research and advisory firms for pharmaceutical and healthcare issues, finds that projected improvements in recurrence-free survival and an only modest increase in risk due to population aging will limit growth of new drug-treatment opportunities for advanced ovarian cancer. While the effect of population aging tends to increase the number of incident cases of ovarian cancer, project a slight decrease in age-adjusted risk which will reduce the total number of incident cases from what they would have otherwise been according to Michael Hughes, Principal Epidemiologist, and Decision Resources. Though it forecasts a slight increase in the proportion of patients diagnosed with non-metastatic advanced disease, it also expects a decrease in the percentage of patients diagnosed with metastatic disease.

#### USA: Depression drug eases joint and muscle pain

Scientists have found that a drug, commonly used to treat depression and anxiety disorder, can effectively reduce joint and muscle pain associated with a breast cancer treatment. Researchers from the University of Michigan Comprehensive Cancer Center studied women, who were taking aromatase inhibitors- a type of drug designed to block the production of estrogen- which fuels some breast cancers. The study looked at the drug duloxetine, or Cymbalta, which is used to treat depression and generalized anxiety disorder. It's also been shown to work in multiple other chronic pain conditions, such as fibromyalgia and, more recently, osteoarthritis. It is believed to decrease pain through its actions in the central nervous system.

#### USA: Cycling can affect a man's fertility

Regular cyclist, at least five hours a week can affect a man's fertility. According to Researchers at Boston University surveyed 2,200 men attending fertility clinics and found that men who cycle at least five hours a week have fewer and less active sperm than men who do not exercise at all. The data were adjusted for body weight, blood pressure, choice of underwear and other variables, and found that men who exercised regularly were no more likely to have problems with the quality or quantity of their sperm than men who never exercised. But when they looked at specific types of exercise, men who said they spent at least five hours a week cycling were twice as likely to have both a low sperm count and relatively poor sperm mobility. This may be due to trauma or temperature rises in the scrotum.

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**USA: Estrogen alone provides protective effect in breast cancer risk reduction**

Hormone replacement with exogenous estrogen alone provided a protective effect while reducing the risk for breast cancer, according to research data on Women's Health Initiative hormone replacement trials. The data also suggests that, there is substantial value in bringing HRT with estrogen alone to the guidelines. The data shows that for selected women it is not only safe, but potentially beneficial for breast cancer, as well as for many other aspects of women's health.

**USA: Fluctuations in Vitamin D Levels in Older Women Associated With Increased Frailty**

A recent study found that lower and higher vitamin D levels were associated with an increased likelihood of frailty in older women. Women with vitamin D levels between 20.0 and 29.9 ng/ml were at the lowest risk of frailty. Vitamin D deficiency and frailty are common with aging. Dimensions of frailty, including weakness and slowness are potential outcomes of vitamin D deficiency and many experts have recommended measuring vitamin D levels in older adults and prescribing vitamin D supplementation if levels are less than 30 mg/ml to prevent adverse health outcomes. Vitamin D supplementation has grown in popularity, yet the association between vitamin D status and risk of adverse health outcomes in older adults is uncertain," opined Kristine Ensrud, MD, professor of medicine and epidemiology, Minneapolis VA Medical Center and the University of Minnesota.

**USA: Hospital Safety Culture depends on Patient-safety Programs**

A detailed set of patient-safety programs can make a marked difference to the "culture of safety" in an academic medical center. It doesn't take decades or tons of money to get from a culture that says 'mistakes are inevitable' to a belief that harm is entirely preventable, according to Dr. Peter Pronovost, a professor of anesthesiology and critical care medicine at the Johns Hopkins University School of Medicine. Drilling that belief in prevention into dozens of disparate hospital units can seem a daunting task, Pronovost acknowledges. His team implemented a comprehensive, unit-based safety program, or CUSP, at JHH, designed to make mistakes more transparent and use that and other tools to improve the culture of safety.

**USA: Protein Targeted To Stop Melanoma Tumor Growth**

Halting the growth of melanoma tumors by targeting the MIC-1 protein that promotes blood vessel development in tumors may lead to better treatment of this invasive and deadly cancer. Angiogenesis is the growth of new blood vessels from existing ones surrounding the growing tumor mass. Tumors start as clusters of cells that transport nutrition and waste through cell walls as well as into and out of gaps between cells. Tumor cells overcome this obstacle by secreting proteins that interact with blood vessels surrounding the tumor, causing formation of new vessels from these existing ones. By targeting the proteins that lead to angiogenesis, tumor growth can be halted.

**USA: Firefly Protein Lights Pathway Improved Detection of Blood Clots**

The enzyme that makes fireflies glow is lighting up the scientific path toward a long-sought new medical imaging agent to better monitor treatment with heparin, the blood thinner that millions of people take to prevent or treat blood clots. The rays penetrate deeper into the body and could give doctors a better way of detecting the proteins involved in blood clotting. The new study describes an advance toward using luciferase in medical imaging. The new material successfully detected minute amounts of a specific blood protein, called factor Xa, which is used to monitor the effectiveness of heparin treatment.

**USA: Yale Scientists Identify Molecular Glue Needed To Wire the Brain**

Synapses have been linked to mental retardation and autism, while synapses are lost in the aging brains of Alzheimer's patients. SynCAM 1, an adhesion molecule that helps to hold synaptic junctions together. They found that when the SynCAM 1 gene was activated in mice, more synaptic connections formed. Mice without the molecule produced fewer synapses. Synapses are dynamic structures. It appears that it ties synapses together; some of this molecule is needed to promote contact but too much glues down the synapse and inhibits its function. It may act a bit like a sculptor who helps to give synapses their shape.

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**USA: PDL BioPharma Provides Fourth Quarter 2010 Revenue Guidance of US\$74m**

Pdl Biopharma, Inc. revenue guidance for the fourth quarter ending December 31, 2010 of approximately US\$74m, as compared with actual results of US\$58.3m for the fourth quarter of 2009, a 27% year-over-year increase. The growth is primarily driven by increased third quarter 2010 sales of Avastin, Herceptin, Lucentis and Tysabri for which PDL receives royalties in the fourth quarter of 2010. The royalty payment received from Genentech included royalties generated on all worldwide sales. Sales of Avastin, Herceptin and Lucentis are subject to a tiered royalty rate for product that is made or sold in the United States and a flat royalty rate of 3% for product that is manufactured and sold outside of the United States.

**USA: UNC Scientists Discover Potential Strategy to Improve Cancer Vaccines**

The promise of vaccines targeted against various types of cancer has raised the hopes of patients and their families. The reality, however, is that these promising treatments are difficult to develop. One of the challenges is identifying a discrete cellular target to stop cancer growth without inactivating the immune system. The function of a protein called NLRP3 can result in a four-fold increase in a tumor's response to a therapeutic cancer vaccine. The immune system has ability to respond to cancer because NLRP3 is important in alerting immune cells to changes in the environment the immune response to cancer. The NLRP3 protein would decrease the immune system's ability to respond to cancer because NLRP3 is important in alerting immune cells to changes in the environment the immune response to cancer.

**USA: Novel Imaging Technique May Reduce Lymphedema in Breast Cancer Patients**

The single photon emission computed tomography with the computerized tomography scans utilized for breast cancer radiotherapy planning may offer patients substantial protection against lymphedema, an incurable, chronic swelling of tissue that results from damage to lymph nodes sustained during breast cancer radiation. The SPECT-CT scan pinpoints the precise locations of the lymph nodes that are critical for removing fluid from the arm, allowing physicians to block them, as much as possible, from X-ray beams delivered to the chest. Lymphedema is a critical concern of breast cancer survivors, so developing a more individualized approach to irradiation is greatly needed.

**USA: Nanoscale Gene 'Ignition Switch' May Help Spot and Treat Cancer**

The switch, called a promoter, is a set of chemical letters that interacts with DNA to turn on gene activity. In this case, the scientists used a promoter called PEG-Prom. The current imaging devices like CT and PET, we can tell if something is wrong in a patient, but we don't have definitive tools to distinguish cancer from inflammation or infection. To differentiate cancer cells from normal cells, scientists connected PEG-Prom to either a gene that produces firefly luciferase, the substance that make fireflies glow, or a gene called HSV1tk, which initiates a chemical reaction with radioactive labels inside the cell that can be detected by imaging devices.

**USA: People with Sleep Apnea at Higher Risk for Aggressive Heart Disease**

The individuals with obstructive sleep apnea are prone to developing an aggressive form of atherosclerosis that puts them at risk for impaired blood flow and cardiovascular events. OSA is caused by obstruction of the upper airway during sleep and is characterized by periodic pauses in breathing, which last for 10 or more seconds. OSA is also commonly associated with snoring. The imaging revealed that the amount of calcified plaque in the coronary arteries was not significantly different between the two groups, but the overall composition of vessel plaque was notably different. Patients with OSA also had a significantly higher prevalence of vessel narrowing and more extensive vessel involvement

**USA: Bladder Regeneration Using Stem Cells from Patients Own Bone Marrow**

The use of bone marrow stem cells taken from the patient opens up new opportunities for exploring organ replacement therapies, especially for bladder regeneration. The bone marrow mesenchymal stem cells have phenotypic and physiological similarities with bladder smooth muscle cells implying that MSCs can serve as an alternative cell source for potentially damaged bSMCs. The transplanted bone marrow cells also retained the ability to express key smooth muscle cell markers, attributes that are required for the continual expansion and contractile cycles of a functional bladder.

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### USA: Medical Model Developed for Regenerating Bladders by Using Stem Cells

The bone marrow stem cells taken from the patient opens up new opportunities for exploring organ replacement therapies, especially for bladder regeneration. The team discovered that bone marrow mesenchymal stem cells have phenotypic and physiological similarities with bladder smooth muscle cells implying that MSCs can serve as an alternative cell source for potentially damaged bSMCs. The transplanted bone marrow cells also retained the ability to express key smooth muscle cell markers, attributes that are required for the continual expansion and contractile cycles of a functional bladder.

### USA: HPV Vaccine Increases Effectiveness, Availability in Developing World

HPV is the number one cause of cervical cancer, which is the second most common cancer in women around the globe. According to the World Health Organization, nearly a quarter of a million women die each year from cervical cancer, 80% of them in developing countries. HPV is a disease that affects the mucous membranes, the powder is more targeted. Effective HPV vaccines on the market, cost, refrigeration and needle disposal shorten the reach by the viruses.

### Boston: Bioactive Peptides Found To Promote Wound Healing

Bioactive peptides promote wound healing through the growth of new blood vessels and epithelial tissue, such as skin. The Wound Repair and Regeneration, provides a better understanding of the mechanisms regulating wound healing and may lead to new therapies for acute and chronic wound healing. Specific bioactive peptides are produced from collagenase treatment of extracellular matrix, which stimulate the healing process within a wound. Angiogenesis, the formation of new blood vessels from existing vessels, is a key step in all types of wound healing from knee scrapes to venous stasis ulcers, pressure sores and diabetic foot ulcers. Collagenases are enzymes that remodel extracellular matrix by cleaving one of its key components.

### Michigan: Synthron receives US FDA marketing nod for generic Xyzal

Perrigo has received final approval from the US Food and Drug Administration for Levocetirizine tablets, a generic version of Xyzal tablets from UCB/Sepracor, which is marketed in the US by sanofi-aventis. Perrigo has the exclusive rights from Synthron to sell and distribute the product in the US. Synthron product is the only approved generic product having a label containing all indications as the brand product and is entitled to 180 days of exclusivity for a product labelled for both allergy and hives. Product shipments commenced immediately upon FDA approval. Levocetirizine tablets (Xyzal) are indicated for the treatment of indoor and outdoor allergies. Sales for Xyzal Tablets were US\$224m, a 12% increase over the previous 12 month period.

### Massachusetts: Cubist Pharma gets US FDA approval for 2-minute IV injection of Cubicin

Cubist Pharmaceuticals has been approved by the US Food and Drug Administration (FDA) for once-a-day dosing as a 2-minute intravenous (IV) injection. Cubicin is the only approved 2-minute IV injection for the treatment of Methicillin-Resistant Staphylococcus Aureus (MRSA) complicated skin infections and bacteremia. In addition to 2-minute IV injection, several other changes to the Cubicin label were incorporated. These include changes and reformatting of the warnings and precautions in the label, updates to the Post Marketing Experience section of the label, and re-formatting of the label to be compliant with the FDA's Physician Labeling Rule.

### Europe

#### UK: Rhode Island: Collegium Pharma spins-out Onset Therapeutics and launches PreCision

Collegium Pharmaceutical Inc, a specialty pharmaceutical company, announced that it has completed the spin-out of Onset Therapeutics, LLC, its wholly owned subsidiary focused on the Dermatology market. Onset will become part of PreCision Dermatology, Inc., a newly founded company that will be led by Jeffrey M. Nugent, founding President and CEO. PreCision is focused on developing, manufacturing, acquiring and marketing a broad portfolio of innovative dermatology products. PreCision gains an experienced management team, a GMP manufacturing facility, ownership of the proprietary Delevo foam technology platform, and an innovative product line formulated to improve patient compliance and clinical outcomes that is marketed by an established national dermatology sales force.

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### London: Keep Alzheimer's at bay with purple fruit

Eating blueberries and other purple fruit and vegetables can keep Alzheimer's at bay because they are a rich source of chelators. These bind the loosely configured iron molecules in the body and prevent them from producing dangerous toxins, called hydroxyl radicals, which trigger degenerative illnesses like Alzheimer's, according to Prof. Douglas Kell, scientist at the University of Manchester. Vitamin C is thought to be of great benefit to the body's ability to defend itself against toxins and diseases. The researcher indicates that excess vitamin C can in fact have the opposite effect if unliganded iron is present. Only when iron is suitably and safely bound ('chelated') will vitamin C work. The importance of iron may have been missed because there is no gene for iron as such.

### Geneva: New Rapid TB Test Could Revolutionize TB Care

A new, rapid Tuberculosis test that could "Revolutionize TB care and control" has been endorsed by the Scientists at WHO (World Health Organization). This new TB test - fully automated NAAT nucleic acid amplification test - provides an accurate diagnosis in approximately 100 minutes. Current tests can take months before a result is returned. According to Dr Mario Raviglione, Director of WHO's Stop TB Department. This new test represents a major milestone for global TB diagnosis and care. It also represents new hope for the millions of people who are at the highest risk of TB and drug-resistant disease. Experts believe that this new rapid test could triple the number of drug-resistant TB diagnoses and double those with HIV-associated TB, in areas with high HIV and TB rates.

### Sweden: Social Stress Leads to Atherosclerosis

Studies on genetically engineered mice show that social stress activates the immune system and accelerates the development of atherosclerosis. Commonly used drugs to reduce blood pressure, however, may stop this process. The study has been conducted using mice that have been genetically modified to spontaneously develop atherosclerosis. It found that situations that disrupt the social environment in which the mice normally live increased atherosclerosis, while more physical forms of stress did not. The scientists discovered that social stress increased blood levels of different markers of inflammation - which previously have been shown to accelerate the development of atherosclerosis explains Evelina Bernberg, lead scientist of the team.

### Europe

#### UK: Breast CT Imaging System Marches Forward as Pain-Free Tool to Aid Mammograms

The CBCT imaging system has some significant advantages over current imaging modalities however its greatest potential may be as an additional tool for diagnosing difficult cases. The system may be extremely useful in locating tumors that are obscured by dense breast tissue, or distinguishing between benign and malignant lesions. The team of URMC researchers introduced the CBCT system at the 2006 RSNA meeting. Dozens of women sought information about enrollment in clinical trials to test the new device, saying they were eager to participate in research that could lead to more comfortable, accurate, annual mammograms. The CBCT scanner produces three-dimensional images while the breasts are in a more natural state.

#### UK: Accurate Diagnosis of Prostate Cancer with Ultrasound

The new technology uses the injection of microbubbles of a contrast agent with no side-effects. The response of the tiny bubbles to ultrasound is different from that of human tissue or blood. This makes the bubbles traceable from the outside, right into the smallest blood vessels. The pattern of blood vessels in tumors is different from that in healthy tissue. The researchers can recognize this pattern from advanced analysis of the bubble concentrations. And because tumors need blood and hence new blood vessels to grow, the researchers expect to be able to see how aggressive the cancer is from the pattern of the blood vessels. The location and size of the tumors turned out to match accurately with the images produced using the new technology.

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**UK: Adapted MRI Scan Improves Picture of Changes to the Brain**

DTI images could eventually be used for early diagnosis of Alzheimer's disease. This can be possible by analysing changes in the white matter among large groups. Extensive population studies are necessary in order to allow differences between groups of patients to be shown statistically. In the coming years, the Delft research group, Quantitative Imaging, Scan Study, in which 5,000 people are participating. It is expected that a substantial statistical basis will be available in five years. The white matter contains the connections between the nerve cells, and the principle of DTI concerns the movement of water molecules within the white matter. The molecules can move easily along the length of the nerve bundle, but not so easily on the perpendicular.

**UK: CT Scans Improved Older Imaging to Detect Coronary Artery Disease**

CT scans are just as good as established older technologies in diagnosing the presence and severity of coronary artery disease. The test is completed within a half-hour, giving physicians a clear picture of how much plaque has built up inside any particular small artery and whether such narrowing and subsequent hardening have compromised the heart's blood supply. SPECT testing requires at least two hours allowing a chemical tracer of blood flow to be absorbed and then imaged. CTP was 100% as effective as the combination of CTA and SPECT in detecting people with severely clogged arteries, and correctly identified patients without a clogged artery 82% of the time.

**UK: Screening Tool May Better Identify Heart Disease in African-Americans**

CT is a common screening tool for patients at risk for cardiovascular disease, because increased calcification in the coronary arteries correlates with a greater risk for a heart attack or other cardiovascular events. Calcium scoring revealed that calcified plaque was much more prevalent in the coronary arteries of Caucasian patients than in the African Americans. The cCTA revealed that, compared with Caucasians, African American patients had a significantly higher prevalence of non-calcified plaque, and more of it. The median volume of non-calcified plaque among the African American patients was 2.2 milliliters, compared with 1.4 ml among Caucasians. cCTA does expose patients to ionizing radiation.

**Asia-Pacific****India: Aurobindo Pharma gets US FDA tentative approval for duloxetine HCl capsules**

Aurobindo Pharma has received tentative approval from the US FDA to manufacture and market duloxetine hydrochloride delayed-release capsules 20mg, 30mg and 60mg. These capsules are the generic equivalent of Eli Lilly and Company Cymbalta delayed-release capsules and indicated for the treatment of major depressive disorder and falls under neurological therapeutic category. The product has a market size of approximately US\$2.9 billion for the twelve months ended June 2010. The company filed ANDA with Paragraph IV certification with first to file status and is currently under litigation in the United States District court for the Southern District of Indiana, Indianapolis division with Eli Lilly and Company.

**India: Lincoln Pharma gains market share with launch Medifil and Skin Temp in India**

Lincoln Pharmaceutical Ltd has gained significant market share with exclusive marketing and distribution tie-up with Human BioSciences Inc, Maryland, USA for advanced Collagen Biotech products, Medifil and Skin Temp. The company launched two innovative wound care management products in India. These products have demonstrated to be at least 50% faster in healing wounds, with a 50% reduction frequency dressing and no scar formation compared to existing products. This has led to Medifil and Skin Temp acquiring 22% market share in its category in India. Lincoln Pharma mission at Lincoln Pharmaceuticals is to provide customers with healthcare products of high quality at an affordable price. The introduction of Medifil and Skin Temp in India has enabled customers to benefit from an advanced wound care solution with better recovery and greater ease of use at a reduced cost. Company are planning to set up a manufacturing unit in India to increase production and expand company reach more people can avail the benefits of these products.

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### India: Biotech products strengthen Lincoln Pharma position

Lincoln Pharmaceuticals has strengthened its position in the Indian pharmaceutical industry by marketing and distributing two innovative wound care management products in the country. LPL tied-up with Human BioSciences Inc., Maryland in USA last year for the exclusive marketing and distribution of two technologically advanced Collagen Bio-tech products. Company entry into the Indian market, the products have demonstrated to be at least 50% faster in healing wounds, with a 50% reduction in frequency dressing and no scar formation compared to existing products. This has led to Medifil and Skin Temp acquiring 22% market share in its category in India.

### Canada: Mindfulness Meditation Preventing Depression Relapse

In preventing depression relapse, a course of mindfulness-based cognitive therapy using meditation was found to be as effective as traditional antidepressant medication when tested against placebo in a recent study carried out at outpatient clinics at the Centre for Addiction and Mental Health (CAMH) in Toronto, and St Joseph's Healthcare, Hamilton, both in Ontario, Canada. With the growing recognition that major depression is a recurrent disorder, patients need treatment options for preventing depression from returning to their lives. A particular cause for concern is suggest that many patients stop taking their antidepressants too soon, either because of the side effects or because they don't like the idea of being on the drugs for years. Mindfulness-based cognitive therapy (MBCT) is being increasingly used as a psychotherapeutic approach for stress reduction, pain management, behavior change, and for self-management symptoms of depression.

### Singapore: Singapore scientists perform genome wide study on CCT

The Scientists from Singapore has discovered two genes from the collagen family which demonstrate strong association with Central Corneal Thickness. CCT is a risk factor of glaucoma, the most common cause of irreversible blindness worldwide. The identification of genetic determinants affecting CCT in the population is crucial in helping to provide useful insights into the mechanisms underlying the association between CCT and glaucoma. This will definitely increase knowledge on the pathogenesis of glaucoma. The study, the largest genome-wide association study ever on CCT and the first in Asia, was jointly conducted by scientists from the Genome Institute of Singapore.

### Middle East

#### Dubai: Alternative medicine: Getting nature's help

Those who tackle obesity often take the mainstream path, mostly unaware of the alternatives. Besides, the less travelled route is usually frowned upon. There are many age-old alternative branches of medicine that have been helping people lead healthy lives for thousands of years. Unlike mainstream Allopathic treatment, Ayurveda, Unani and Homoeopathy take the body nature and character of the patient (humours) before offering a remedy. There is no one cure for all in these systems, for people vary and so do their constitution. Ayurveda, a traditional medicine administered for thousands of years in India, considers the imbalance in the metabolic activity of a tissue as the root cause of fat accumulation, according to the practitioners.

## INVESTMENTS

### Americas

#### USA: Sofie Biosciences Raises US\$2m for Diagnostic Imaging Agents and Devices

Sofie Biosciences, a developer of agents and devices for the molecular imaging of disease, announced an additional US\$2m from new and existing investors. Funds will be used for the development of new PET imaging agents and for enhancements to their PET imaging systems and chemistry units. The round includes the first institutional and large corporate financing to the firm including investment by the Cycad Group. This investment represents an important step towards achieving the goal of rapidly commercializing new PET technologies and imaging agents in an effort to make PET more widely accessible to more physicians and scientists, according to Patrick Phelps, President and CEO of Sofie.

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## Asia Pacific

### Malaysia: Global Capital and Pantai Group to develop Gleneagles Medini Hospital

Global Capital & Development (GCD), a joint venture consortium tasked with the development of Medini, has announced a landmark deal with Malaysia's leading healthcare provider, Pantai Group, to develop the Gleneagles Medini Hospital. The hospital will be located in Iskandar Malaysia, the country's future engine of growth located at the southern tip of Malaysia in Johor. The hospital will be developed across 15 acres of land located in Medini North, the city's lifestyle hub, and is positioned as one of the premium hospitals under Parkway Health. The 300-bed private tertiary healthcare complex will be completed in stages and will be Pantai's 12th hospital in Malaysia. The development complements Iskandar Malaysia's vision to become a regional healthcare hub and will set new benchmarks for quality healthcare, reinforcing Malaysia's reputation for delivering world-class medical services for both Malaysian and foreign patients.

### India: Bengaluru Gets an Ayurvedic Hospital

Earth Hospital, a leading chain of multi-speciality Ayurvedic hospitals spread across Tumkur, Mangalore, Udupi and Hyderabad, recently opened its fifth hospital at BTM Layout in Bengaluru. The hospital will provide an extensive range of out-patient and in-patient Ayurvedic medical services, including diagnosis and cure for serious medical conditions, under one single roof, according to Dr Anish M Kurias, Chairman, Earth Hospital Group. With state-of-the-art facilities, qualified Ayurvedic medical practitioners, therapists, equipments and medicines, Earth Hospital provides customised treatment, including more prevalent health issues such as asthma in children, 'monomedi', a onetime Ayurvedic remedy for migraine, running nose and arthritis. Bengaluru has witnessed a growing rate of both lifestyle and chronic illnesses. The city is in dire need of a high quality facility such as providing traditional and proven form of medicine— Ayurveda treatments will fill a significant gap in medical services available to people.

### India: Cumballa Hill Hospital for Major Expansion

Cumballa Hill Hospital and Heart Institute, in Mumbai, is on an expansion spree. The 50-bed hospital is being expanded to become a 220-bed multi speciality hospital with 22 storeys. The floor space area of the new hospital would be 2,40,000 square feet, inclusive of 60,000 square feet for parking. The hospital management has acquired the existing hospital's adjoining area for further expansion of services, according to Dr. Vijay Shetty, MD, Cumballa Hill Hospital. The construction work would begin within six months from now and the new hospital would be commissioned within 24 to 30 months. The cost of building the new hospital would be Rs1000m approximately. Funding would be from internal accruals and banks. The first phase, slated to be commissioned within a year of construction, would have 120 beds and the second phase would see addition of 100 more beds in the second year.

### India: Green Hospital Inaugurated in Ahmedabad

The first "green" building in Gujarat was unveiled as part of the Care Institute of Medical Sciences (CIMS) Hospital, in Ahmedabad. The multi-super speciality hospital contains more than 150 beds with plans afoot to extend the capacity by a further 300 beds. The project cost more than Rs1500m to be built and would require a similar amount for any expansion. Nearly half of the open space in the hospital has been filled with courtyards and gardens while the building also consists of sewage plants to recycle water and rain-water harvesting pits. According to the Managing Director of CIMS, Milan Chag, the medical costs in the hospital is 10% cheaper compared to other hospitals while the service provided ranks amongst the best in the country.

### India: DoP to set up Rs20 billion VC fund to encourage drug development

To support and encourage the drug development in the country, the Department of Pharmaceuticals (DoP) will soon set up a Rs20 billion Venture Capital (VC) fund. Initially the Government would start the project with around Rs5 billion. The proposed VC fund is in its conceptual stage at present but will start on as soon as the DoP sets up the national authority. DoP in the process of setting up a national authority, which will be in place in two to three months. DoP will start working on various initiatives that

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we have outlined VC fund for drug development is one among them. Initiative is to provide financial aid to the pharma companies who are interested in drug development. Setting up of venture capital fund is to address the lack of early stage venture capital in the country for drug development.

## MERGERS & ACQUISITIONS

### Americas

#### California: Apexigen enters antibody discovery collaboration with Centocor Research

Apexigen, Inc. has entered into collaboration and worldwide license agreement with Centocor Research and Development, Inc. and its affiliates to utilize Apexigen's proprietary therapeutic antibody technologies to discover and develop monoclonal antibody drugs. Apexigen will generate and screen antibodies to several targets specified by Centocor R&D, which will be responsible for development and commercialization of all products resulting from the collaboration. While financial details were not disclosed, Apexigen will receive an upfront license fee, and is eligible to receive future milestone and royalty payments if certain development and commercialization milestones are achieved.

#### USA: Compendia Bioscience and Althea Diagnostics Develop Breast Cancer Segregation Panel

The Breast Cancer Segregation Panel measures 96 genes that represent key molecular variability of breast cancer and have been derived from a proprietary meta-analysis of cancer genomic profiles from more than 5,000 clinical samples. The assay has been optimized by Althea Diagnostics to measure the genes using quantitative RT-PCR from formalin-fixed tissue samples to enable rapid translation to real-world clinical settings. Compendia Bioscience will analyze the data generated by the assay and will perform correlation studies to end-points of interest such as drug response. This will allow for development of multiple drug-specific companion diagnostics from a standardized platform

#### Ohio: Cardinal Health acquires Chinese pharma distributor Zuellig Pharma for US\$470m

Cardinal Health announced the completion of a US\$470m acquisition of privately held Zuellig Pharma China, a leading health care distribution business in China, known locally as Yong Yu, and the largest pharmaceutical importer in the country. The transaction extends Cardinal Health's distribution and services presence into one of the world fastest growing health care markets and provides a platform to drive long-term growth. Cardinal Health is well positioned in the pharmaceutical distribution market in China, which is expected to grow at a compound annual growth rate of 20% through 2014 and become the second largest pharmaceutical market in the world after the United States.

#### SAN DIEGO: Tanabe Research Labs Enters R&D Partnership with Anaphore

Tanabe Researches entered into a partnership with Anaphore Inc. for the research and preclinical development of novel protein therapies for autoimmune diseases. TRL and Anaphore will generate novel trivalent proteins called Atrimers that can be programmed to bind to and activate or inhibit targets of interest. The partnership will focus on strategies to develop biologic therapies for autoimmune disorders such as, rheumatoid arthritis, inflammatory bowel disease, and psoriasis. TRL and Anaphore will commence the research and development alliance immediately.

#### USA: Zenobia Therapeutics Enters into Research with Lundbeck For the Parkinson's disease

Zenobia provides a commercial fragment library, and access to their structural biology, crystallography and fragment-based lead discovery expertise through partnerships, consulting and collaborations. Zenobia's internal programs combine fragment-based lead discovery with the expertise of biologists and clinicians to find treatments for devastating illnesses for which there is no disease altering treatment such as Parkinson's disease and pediatric neuroblastoma. The company has a strong structural biology team and the lead on this important Parkinson's target. The protein expression and x-ray crystallography for the Parkinson's disease target, LRRK2.

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**Europe****Shropshire: Dechra acquires UK-based veterinary pharma company Genitrix**

Dechra Pharmaceuticals PLC has acquired the entire issued share capital of Genitrix Limited (Genitrix) from its owner managers for an initial cash consideration of £5.4m. A further £0.8m is payable upon achievement of specific milestones. The consideration is being funded from Dechra's existing cash resources. The acquisition of Genitrix, a veterinary pharmaceuticals company based in Billingshurst, UK, is consistent with our strategy to grow pharmaceuticals international veterinary pharmaceutical business. Genitrix achieved revenues of £2.4m. Genitrix range of equine and companion animal products enhances and complements our UK product portfolio. Furthermore the recently approved canine epilepsy product, Libromide, provides future growth opportunities through potential mutual recognition in Europe. The acquisition is expected to be earnings enhancing in the first full year following ownership.

**Ongar: Selcia enters drug discovery collaboration pact with Gilead Sciences**

Selcia Limited has collaboration agreement with Gilead Sciences, Inc. Building on an established partnership following significant progress made to date, Selcia's chemists and biologists will continue to provide integrated drug discovery services to support Gilead's liver disease research programmes. Selcia are pleased to announce the continued research collaboration with Selcia in this very important therapeutic area for Gilead. Scientists from both companies have interacted well together and have made successful progress against some difficult targets. Selcia are looking forward to the collaboration delivering candidates for clinical studies in the foreseeable future

**UK: Thermo Fisher Scientific Collaborates With to Validate Emerging Technique in Drug**

The guaranteed aqueous solubility of Maybridge Ro3 Fragments is not only key from a practical perspective, but it also provides an insight into likely ADME problems as the hits are evolved into drug-like molecules, says by product manager for Maybridge products at Thermo Fisher Scientific. The continuing their collaboration as the study now expands to drug development using additional Maybridge Ro3 Fragments. The Maybridge Ro3 Diversity Fragment Library is a carefully engineered set of structurally diverse fragments, recently expanded to 1500 products. All Fragments hold an experimental guarantee of solubility to provide a robust and rich source of optimizable hits for screening programmes. The library is available pre-plated in 500 compound sets for varied level entry points into fragment based drug discovery.

**UK: Sofie Biosciences Raises US\$2m Development of Diagnostic Imaging Agents and Devices**

Sofie Biosciences, a developer of agents and devices for the molecular imaging of disease, the closing of an additional US\$2m from new and existing investors. Funds will be used for the development of new PET imaging agents and for enhancements to their PET imaging systems and chemistry units. Sofie Biosciences is developing novel molecular imaging agents to enable earlier and more accurate diagnosis, treatment selection, and therapeutic monitoring of major medical disorders. Sofie is combining new PET imaging agents with innovative imaging systems to provide researchers and physicians with tools to better investigate the biology of disease.

**UK: CareFusion Launches Respiratory Airway Adapter to Improve Patient Safety**

The company enables uninterrupted access to a ventilated patient's airway without having to disconnect the patient from the ventilator. Disconnecting a patient from the ventilator circuit can lead to life-threatening lung infections and degradation of lung function. The new Verso 90 adapter is part of the AirLife Closed-Suction System which is different from traditional closed-suction catheters because of its modularity. With this system, a clinician can change catheters or perform various airway access procedures through a single port without having to disconnect the patient from the ventilator. This leads to increased patient safety because disconnecting a patient from the ventilator circuit can lead to lung derecruitment, which in some patients, may result in atelectasis or hypoxemia

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**Asia-Pacific****India: Natco inks pact with Watson Pharma for Lenalidomide tablets**

Drug manufacturer Natco Pharma announced that it has entered into a marketing and development agreement with Watson Pharmaceuticals Inc for Lenalidomide tablets. The tablet which is available in 5, 10, 15, 25 mgs strengths is used in the treatment for multiple myeloma. The company has filed an Abbreviated New Drug Application or ANDA with the US Food and Drug Administration, seeking approval to market its lenalidomide 5, 10, 15 and 25 mg product. Natco's lenalidomide tablets are generic versions of Celgene's Revlimid tablet.

**Singapore: TGR BioSciences partners with Cedarlane**

TGR BioSciences, is advanced cell based assay technologies in the fields of cancer, kinase and GPCR research, has informed a distribution partnership with Cedarlane Laboratories of Burlington. Cedarlane will become a distributor of TGR's new ELISA-One technology assay reagents in Canada and the US. The first 20 ELISA-One immunoassay kits for cellular phosphoprotein detection will be available. The ELISA-One phosphoprotein assay reagents from TGR will complement very well the quality products that Cedarlane has gained a reputation for carrying for the research community. The increasing trend and need for high performance, and yet affordable and simple assays such as ELISA-One, that address the ever more complex questions that Cell Biology researchers

**India: HCL Tech signs IT infrastructure mgmt deal with Purdue Pharma**

IT service provider HCL Technologies Ltd announced that it has signed a multi-year end-to-end 'IT Infrastructure Management' agreement with pharmaceutical company Purdue Pharma LP. The scope of the deal covers management of two data centers and all remote locations of the client in the US. 'HCL engagement with Purdue Pharma is another feather in the cap for HCL Technologies in the Life Sciences Industry. HCL already enjoys the success of managing IT infrastructure for 8 out of the top 15 global pharmaceutical companies and 7 out of top 15 global medical devices companies.

**OPERATIONS****Americas****USA: New Mouse Model Could Lead to Better Treatments for Pediatric Hormone Deficiency**

Using a targeted mutation of a gene important in pituitary system development, the researchers have created a mouse line that serves as a model of combined pituitary hormone deficiency, a disease that causes short stature, metabolic disease, pubertal failure and other problems. The study was reported in the current online edition of the Proceedings of the National Academy of Sciences. This mouse model should enable us to gain a stronger understanding of the molecular and cellular events involved in the progression of pediatric combined pituitary hormone deficiency. Mice that do not produce any LHX3 protein are stillborn, but by crafting a gene that produces a truncated form of the protein, the researchers produced a mouse model that closely resembles the disease among children with a similar genetic mutation.

**USA: EDDA Technology Introduces IQQA Liver Suite for Liver Cancer Diagnosis**

The IQQALiver Suite addresses the challenges of modern multidisciplinary advanced quantitative imaging evaluation and management, which often require the sharing of processing analysis result in a real-time interactive conferencing fashion, simultaneously and collaboratively from multiple departments in different locations. The IQQA Liver Suite utilizes EDDA's proprietary IT technology to streamline system platform architectural and workflow design. This not only offers immediate integration with hospitals' existing PACS systems, but also allows access to the 4-D IQQA-Liver application for volumetric quantitative assessment and virtual operative simulations from anywhere anytime the IQQA on Demand Internet platform. Furthermore, a virtual session may be created to allow simultaneous accesses to and manipulations of the same dataset, where conferencing/collaboration from multiple department/locations becomes easy to manage.

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### USA: Researchers Discover New Signaling Pathway Linked To Inflammatory Disease

The researchers report that signaling by the interleukin 1 receptor (IL-1R) controls expression of a protein called DUBA (deubiquitinase A), which in turn affects production of anti-inflammatory cytokines reacting to certain bacterial stimuli. Cytokines are molecules that help trigger an immune system response to infections and cancer. The IL-1R is essential to producing key anti-inflammatory cytokines like IL-10 and type 1 interferon, but genetic alterations, infection and some drugs can disrupt the signaling process, resulting in reduced or increased cytokine production that upsets delicate balances and leads to disease.

### California: PointCross releases SDIS technology and services for BioPharma industry

PointCross has release of its Study Data Integration and Search technology and associated services to the BioPharma industry for private use with legacy and current studies. SDIS is the first solution of its kind that closes a major gap in the non-clinical phase of the R&D lifecycle and it creates an instantly searchable resource of all non-clinical study and assay data for BioPharma companies and collaborative consortia like the C-PATH Predictive Safety Testing Consortium and the Innovative Medicines Initiative in Europe. BioPharma companies and regulatory agencies have growing concerns regarding biomarkers and trends that point to safety and efficacy indications which are hidden in the massive amounts of disparate study data.

### Europe

#### London: Human brain stem cells grown in rats

The human brain stem cells which were transplanted into the brains of newborn rats have matured and are able to function just like native rat cells. The international team says that the finding demonstrates the potential for people with brain damage, caused by epilepsy or Parkinson's for example, to use their own brain stem cells as a treatment. The key finding was that the stem cells had the ability to turn into all types of brain tissue in rats.. Then they multiplied the cells in the laboratory, and then genetically engineered them so that they would glow green under ultraviolet light. The human cells had begun to form synapses, or communication links, between neighboring cells. The scientists also found that the cells were fully functional and able to signal to rat neurons, as shown by lab tests monitoring the cells' electrical activity.

### UK: Aware Introduces Healthcare Software Platform for High-Performance Image at RSNA

AccuRad Image Share Server is now a modular, service-oriented application services platform used to integrate advanced image sharing and processing with electronic health records, PACS, teleradiology systems, and health information exchange systems. AccuRad ImageShare Server is programmable, scalable, extensible, and secure, capable of managing multiple aspects of data exchange in a healthcare environment. It offers several off-the-shelf software modules for DICOM, XDS-I, JPEG2000, JP1P, audit trail, and PIX Consumer. This includes a rich web-based user interface that enables several useful functions for operators and administrators.

## FDA APPROVALS

### Asia-Pacific

#### India: Mylan AIDS drug gets tentative FDA approval

Canonsburg-based generic drug giant Mylan Inc. that its subsidiary Matrix Laboratories Ltd. has received tentative approval from the U.S. Food and Drug Administration for its new drug application for abacavir sulfate tabletes, a 60-milligram preparation used to treat children with HIV/AIDS. Approval of the new drug application was granted through the President's Emergency Plan for AIDS Relief, and the product will be eligible for purchase outside the United States. Abacavir sulfate tablets are used in combination with other medications to control HIV infection. The drug is included in a class of drugs known as nucleoside reverse transcriptase inhibitors, and the tablet is a preferred form because of its ease, accuracy and convenience of the drugs.

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## OTHERS

### **IPA asks government to amend D&C Act to ban strip cutting for benefit of customer**

The Indian Pharmaceutical Association (IPA) has urged the Drugs Controller General of India (DCGI) to rationalize the strip sizes of medicines on the basis of dosing and cost and eventually ban strip cutting in the interest of the public and health care in the country. The DCGI to include strip cutting issue in the agenda of next meeting of the drugs technical advisory board (DTAB) to thoroughly discuss and to find a workable solution to the issue in the best interest of the public and healthcare in the country. The IPA informed the DCGI in a letter that it does not see any clear-cut provisions in the law whether strip cutting is allowed or not, and different Indian regulators have different opinions.

## EXPORT & IMPORT

### **Asia-Pacific**

#### **Indian API exports to grow more than double by 2013-14**

The market-size for the Active Pharmaceutical Ingredients is expanding rapidly and India in all likelihood may double its exports within a couple of years. Global Aurobindo Pharma at the CPhI India which began in Mumbai. The markets for API are one of the most rapidly developing among the pharmaceutical industry. Currently, the API market in India stands at US\$10-12 billion out of which, exports account for about US\$5 billion. World API market stands at US\$35 billion. By 2013-14 the Indian API market will be about US\$18 billion and the world market would be US\$53 billion. Indian exports would have been increased up to US\$12 billion which is more than double the current size.

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## Product Focus – Boostrix

### Introduction

Boostrix is a new vaccine that provides protection against tetanus, diphtheria and pertussis for adolescents between the ages of 10 and 18 years and the vaccine get recent approval by the FDA was allowed news to parents and Pediatricians who have been worried about the increase in the number of cases of pertussis in recent years. According to the FDA, pertussis is a highly communicable disease of the respiratory tract that can be especially serious for infants less than one year old, and may even be fatal. Pertussis can cause spells of coughing and choking that make breathing difficult. The disease is generally less severe in adolescents, but it is thought that they might transmit the disease to susceptible infants and other family members. Boostrix, or Tdap, includes the tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine in a single shot and is stored in refrigerator at 2°C to 8°C. It should be stored in the original package in order to protect from light. Do not freeze. Freezing destroys the vaccine. Keep out of the reach and sight of children. Do not use after the expiry date which is stated on the carton.



GlaxoSmithKline has launch of the vaccine Boostrix in India. The vaccine comprises of acellular pertussis reduced, diphtheria toxoid reduced and tetanus toxoid. Boostrix has been registered for use in children over the age of four years, who have already received their primary DTP doses in the first and second year of life. Currently, Boostrix is the only globally approved acellular pertussis boosting vaccine for all age groups available in India. Immunity from primary vaccination against pertussis wears off after three to four years, leaving many older children, adolescents and adults susceptible to this highly contagious disease. Boostrix adds an acellular pertussis component to the routine diphtheria-tetanus booster currently available for children over four years old.

### Types of diseases that are used by vaccine

The vaccine works by causing the body to produce its own protection against these diseases. Diphtheria, tetanus, and pertussis are all serious life-threatening diseases caused by bacterial infection.

- **Diphtheria:** This is mainly affects the airways and sometimes the skin. Generally the airways become inflamed causing severe breathing difficulties and sometimes suffocation.
- **Tetanus:** Tetanus bacteria enter the body through wounded skin. Wounds that are especially prone to infection are burns, fractures, deep wounds or wounds contaminated with soil, dust, horse manure or wood splinters.
- **Pertussis:** Pertussis is a highly infectious illness. The disease affects the breathing tract causing evere spells of coughing that may interfere with normal breathing. The coughing is often accompanied by a whooping sound.

### Uses

Boostrix is used for preventing tetanus, diphtheria, and pertussis. This booster vaccine is approved for adults and children as young as 10 years old. This was formulated after healthcare providers determined that the childhood DTaP series does not provide sufficient protection from pertussis throughout adolescence and adulthood. There are currently no off-label uses.

### Dosage and administration

**Preparation for Administration:** Shake vigorously to obtain a homogeneous, turbid, white suspension before administration. Do not use if resuspension does not occur with vigorous shaking. Inspect Boostrix visually for particulate matter, discoloration, or cracks in the vial or syringe prior to administration. If any of these conditions exist, the vaccine should not be administered. Boostrix not be combined through reconstitution or mixed with any other vaccine. Administer this product intravenously, intradermally, or subcutaneously.

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Email: info@cygnusindia.com; Website: www.cygnusindia.com

### Dose

Boostrix is administered as a single 0.5-mL intramuscular injection into the deltoid muscle of the upper arm. There are no data to support repeat administration of Boostrix. Five years should elapse between the last dose of the recommended series of Diphtheria and Tetanus Toxoids and Acellular Pertussis Vaccine Adsorbed and Tetanus and Diphtheria Toxoids Adsorbed for Adult Use vaccine and the administration of Boostrix.

### Working and Side Effects of Boostrix

Boostrix contains diphtheria and tetanus toxoids and pertussis antigens. Toxoids are bacterial toxins that have been detoxified. Although the toxoids will not cause the actual disease, they stimulate the immune system to produce antibodies to the toxin. Antigen is the generic term for substances that cause the body to produce an immune response and antibodies. Boostrix contains three different pertussis antigens that have been detoxified. Basically, the antigens and toxoids in Boostrix trick the body into thinking it has been exposed to diphtheria, tetanus, and pertussis. The body produces antibodies that will help fight these diseases if future exposure occurs. The Side Effects of Boostrix include pain, headaches, and fatigue and the serious problems, such as a high fever, difficulty breathing, and paralysis. Most of the people tolerate the vaccination well and, in most cases, the side effects are mild and easily treated.

#### Side Effects

- Dizziness
- Headache
- Ill feeling
- Sleepiness
- Vomiting
- Diarrhea

### Market Strategy

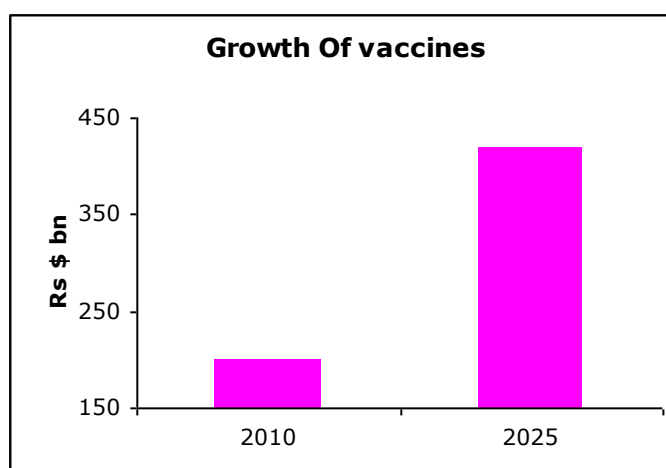
Vaccines have become big business for pharmaceutical giants like GlaxoSmithKline, sanofi Pasteur and Merck & Co. For e.g. GSK Bio, GSK's vaccines arm, accounted for 8.4 % of GSK's pharmaceutical turnover in 2006. And it is expected that by 2012 companies like GSK, Sanofi-aventis, Merck & Co., and Wyeth vaccines arm will fetch them more than 10 % of sales from vaccine as a percentage of overall pharma sales. These strong performances were partially offset by vaccines like Infanrix and hepatitis vaccines. Sales of products like Imigran (down 65%), Lamictal (down 53%), Wellbutrin XL (down 73%), and Requip (down 30%) continued to be impacted by generic competition. Valtrex revenues declined 8% following the entry of generic competition in November 2009. Human vaccines market comprises of prophylactic vaccines and therapeutic vaccines. A new entrant in the vaccines market is the pediatric combination vaccine.

#### Major Players:

- GlaxoSmithKline
- Sanofi Pasteur
- Merck & Co

### Indian Scenario

Vaccine must be licensed first by the appropriate authority for the use in the country. The vaccines Drugs licensing authority in India, National Regulatory Authority is Drugs Controller General of India which is approved by WHO also. For licensing of a new vaccine, the vaccine manufacturer should conduct the phase I, II, and III trials and must submit their results to NRA for its approval. There are both central and state licensing authorities. Good clinical practice and ethical guidelines for approval exist. Licensing of products in India is by the Central Licensing Approval Authority. The Drug Technology Advisory Board approves introduction of vaccines into the immunization services, while all vaccine approval and clinical trials is by



Source: Cygnus Market Resources

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the CLAA. The state licensing authority inspects and grants licensing for retail. The combining of multiple related or unrelated antigens into a single vaccine is not a new concept. Several combination vaccines have been in use including the trivalent influenza vaccines, diphtheria, pertussis and tetanus toxoids, the polio vaccines, MMR and meningococcal do not have much basis and for all practical purposes each individual constituent does have equally protective efficacy as when given separately.

### Outlook

The vaccines landscape is very different now as compared to few years back. With increasing public awareness about preventive healthcare and increased spending by governments for the same has once again put spotlight on the vaccines. Quality of life is expected to increase markedly with introduction of newer vaccines covering more and more diseases. Due to this vaccines, which were perceived as low margin business before, have now emerged as one of the most lucrative segments in the pharmaceutical industry. Moreover with the success of a number of blockbuster products, the market place has changed dramatically. Pharma major's today look upon vaccines as a driver for their future growth. The market is expected to witness new levels with adoption of novel vaccine delivery mechanisms such as edible, oral, and mucosal. Also critical to market success is the need for using improved adjuvants in vaccines for optimal immunogenicity. Therapeutic vaccines are currently being investigated and are in various stages of development. Companies, both established and upcoming are sinking a major chunk of research resources into the development of therapeutic vaccines capable of fighting diseases such as cancer and AIDS among others.

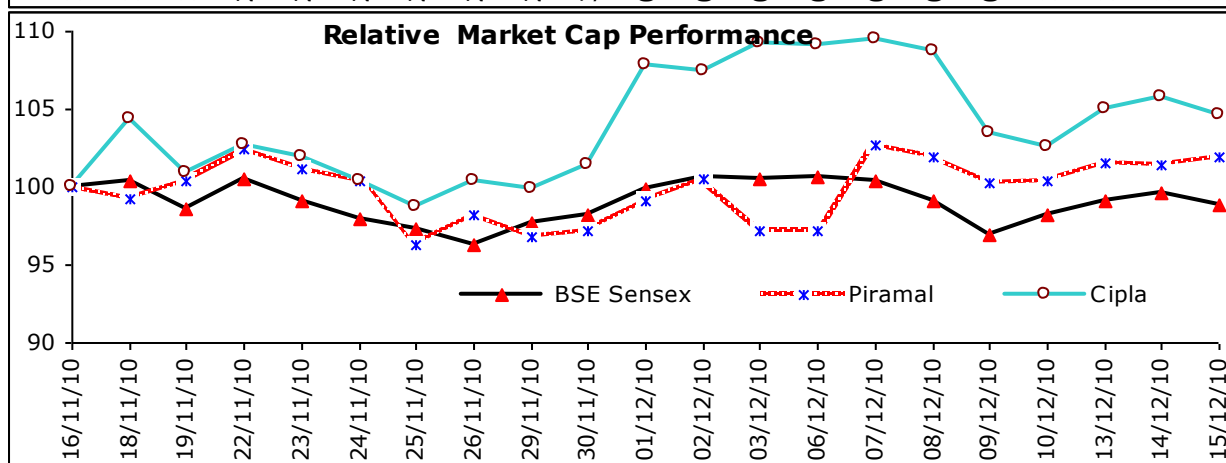
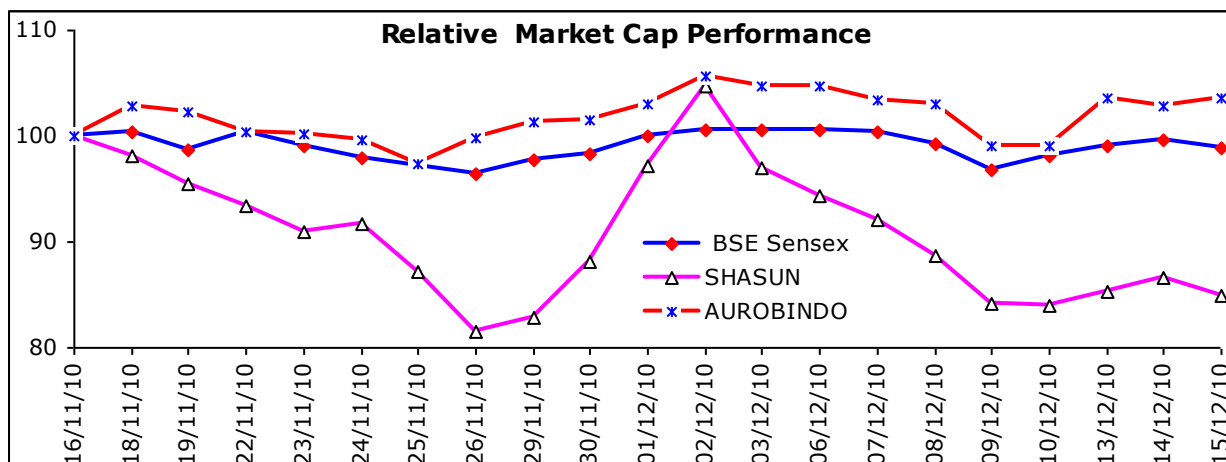
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## Stock Scan



Source: BSE India; Cygnus Research

Index	1st Week (16-24 Nov 2010)			2nd Week (25th Nov - 1st Dec 2010)		
	Opening	Closing	Var (%)	Opening	Closing	Var (%)
BSE (points)	19865.14	19459.85	-2.04	19,318.16	19,850.00	2.75
Cipla (Rs)	338.95	340.05	0.32	334.70	365.35	9.16
Piramal (Rs)	453.50	455.20	0.37	436.75	449.40	2.90
SHASUN (Rs)	71.25	65.40	-8.21	62.05	69.20	11.52
AUROBINDO (Rs)	1230.55	1226.25	-0.35	1198.90	1268.55	5.81

Index	3rd Week (02nd - 8th Dec 2010)			4th Week (9-15 Dec, 2010)		
	Opening	Closing	Var(%)	Opening	Closing	Var(%)
BSE (points)	19,992.70	19,696.48	-1.48	19,242.36	19,647.77	2.11
Cipla (Rs)	364.05	368.70	1.28	350.55	354.40	1.10
Piramal (Rs)	455.60	462.40	1.49	454.85	462.25	1.10
SHASUN (Rs)	74.60	63.15	-15.35	59.90	60.45	0.92
AUROBINDO (Rs)	1299.35	1267.70	-2.44	1219.70	1275.05	4.54

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## Upcoming Events

<b>1.</b>	<b>Event</b>	<b>Healthcare Infrastructure &amp; Medical Technology</b>
	<b>Date</b>	Feb 02-05, 2011
	<b>Venue</b>	All India Institute of Medical Sciences (AIIMS) Campus New Delhi, India
	<b>Highlights</b>	It will provide a platform of synergy for Academic Interaction and Networking Leading national and international experts and policy makers in their respective fields - hospital administration, hospital architecture, hospital engineering, hospital project management; it will attend, participate and share their thoughts in this Conference.
	<b>Contact Details</b>	AIIMS, Safdarjung Enclave, Aurobindo Marg, Ansari Nagar, Hauz Khas, Delhi- 110029, New Delhi, India. Tel:+(+91)-9810233617
<b>2.</b>	<b>Event</b>	<b>South MediLab Expo</b>
	<b>Date</b>	Feb 05-07, 2011
	<b>Venue</b>	Gandhi Museum Ground Madurai, Tamil Nadu, India
	<b>Highlights</b>	The manufacturers, traders and distributors of medical and diagnostic lab instruments. It also provides the perfect platform to exchange of ideas and building of new contacts among the industry leaders and medical professionals. The show is highlighted with medical, scientific and lab instruments.
	<b>Contact Details</b>	Chennai Trade Events, 2/8 Rajarathnam Street, 2nd Floor, Near Ag Hospital, Tambaram West, Chennai - 600 045. India. Tel: +(91)-(44)-22264687
<b>3.</b>	<b>Event</b>	<b>Pharma Con Davos</b>
	<b>Date</b>	Feb 06-11, 2011
	<b>Venue</b>	Davos Congress Centre Davos, Switzerland
	<b>Highlights</b>	It will bring together the manufacturers and suppliers of process plant and equipment, for this growing industry, all under one roof. The exhibition will provide an excellent platform for service providers to showcase their products and services to decision makers from leading Pharmaceutical manufacturers.
	<b>Contact Details</b>	Wuv (werbe- Und Vertriebsgesellschaft Deutscher Apotheker Mbh), Carl-Mannich- Strasse 26, Eschborn, Germany. Tel:+(49)-(61)-96928404
<b>4.</b>	<b>Event</b>	<b>International Conference on Drug Discovery &amp; Therapy</b>
	<b>Date</b>	Feb 07-10, 2011
	<b>Venue</b>	Dubai Mens College, Dubai, United Arab Emirates.
	<b>Highlights</b>	International Conference on Drug Discovery and Therapy is the second major international conference and exhibition of this series, which aims to present cutting edge advances in various disciplines of drug design and discovery that have been recently achieved.
	<b>Contact Details</b>	Eureka Science Limited, P.O. Box 7917, Saif Zone, Sharjah, United Arab Emirates. Tel:+(971)-(6)-5571132; Fax:+(971)-(6)-5571134
<b>5.</b>	<b>Event</b>	<b>Medical Device &amp; Technology Test Expo</b>
	<b>Date</b>	Feb 08-10, 2011
	<b>Venue</b>	Cologne Exhibition Centre, Cologne, Germany.
	<b>Highlights</b>	Medical Device & Technology Test Expo delivers, for the first time ever, the full range of test and evaluation equipment, together with solutions and service providers, all under one roof. Everything you need for a unique and completely test relevant trade fair.
	<b>Contact Details</b>	Total World Media Ltd10 Dunley Hill Court, Ranmore, Dorking, UK, Dorking, United Kingdom. Tel:+(+44)-(1306)-803030

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<b>6.</b>	<b>Event</b>	<b>Medicall</b>
	<b>Date</b>	Feb 11-13, 2011
	<b>Venue</b>	Netaji Indoor Stadium, Kolkata, West Bengal, India
	<b>Highlights</b>	It is transitioned into one of the lone fair for attracting end users and full filling needs as hospital needs supermarket. It is a concurrent event which proves to a gamut of more than 200 exhibitors and is displaying products and services. Exhibited products and services can be categorized as Hospital Information System, solutions, surgical and examination furnitures, rescue and emergency equipment, medical disposables, cleaning equipment, rescue and emergency equipments and others. The show proves to be a highly successful point in attracting affluent producers, dealers, suppliers.
	<b>Contact Details</b>	Medexpert, C-3 Shree Vidya Apartments, No 14, Balakrishna Street West Mambalam, Chennai, India. Tel:+(91)-(44)-24718987
<b>7.</b>	<b>Event</b>	<b>Pharmac India</b>
	<b>Date</b>	Feb 12-14, 2011
	<b>Venue</b>	Gujarat University Exhibition Hall, Ahmedabad, India.
	<b>Highlights</b>	Pharmac India is recognized as a focused exhibition for Pharma and Health care industry. It is 3 days exhibition which is aiming towards highlighting varied related medical products. It will prove to be a large hub of reputed professionals from pharmaceutical formulation, herbal products, veterinary drug, medical and disposal, pharmaceutical machinery and many other sectors.
	<b>Contact Details</b>	Orbitz Exhibitions Private Limited Navyug Industrial Estate, T. J. Road, Sewree, Mumbai, India Tel:+(91)-(22)-24102801; Fax:+(91)-(22)-24102805
<b>8.</b>	<b>Event</b>	<b>Pharma World Expo</b>
	<b>Date</b>	Feb 23-26, 2011
	<b>Venue</b>	Bombay Exhibition Centre(BEC) Mumbai, India
	<b>Highlights</b>	It is one of the foremost shows for pharma and biotech industry. It will prove to be one of the largest exhibition and conference for chemical and pharma industry. Vesting on an area more than 30,000 square meters.
	<b>Contact Details</b>	Chemtech Foundation 26, Maker Chambers VI Nariman Point, Mumbai, India Tel:+(91)-(22)-22874758; Fax:+(91)-(22)-22870502
<b>9.</b>	<b>Event</b>	<b>Asia Healthcare Expo</b>
	<b>Date</b>	Feb 24-26, 2011
	<b>Venue</b>	Bangabandhu International Conference Centre, Dhaka, Bangladesh.
	<b>Highlights</b>	Asia Healthcare Expo will bring together all the key players under one roof, providing exhibitors with a compelling networking opportunity-to precisely target relevant budget-holders in the shortest time possible and at an affordable cost.
	<b>Contact Details</b>	Bangladesh Association Of Pharmaceutical Industries (BAPI) Bangladesh Aushad Shilpa Samity, House # F-31, Bangladesh. Tel:+(880)-(2)-9889731; Fax:+(880)-(2)-8816767
<b>10.</b>	<b>Event</b>	<b>Integrtative Healthcare Symposium</b>
	<b>Date</b>	Mar 04-06, 2011
	<b>Venue</b>	New York Hilton Hotel New York, United States Of America
	<b>Highlights</b>	It is the only exhibition organized under the auspices of the Ministry of Health and in cooperation with the Physicians Association. With a constantly updated visitor and potential participant database and active PR campaign a large number of specialized visitors are guaranteed.
	<b>Contact Details</b>	Diversified Business Communications, 121, Free Street, P.O. Box 7437, Maine, United States Of America. Tel:+(1)-(207)-8425500; Fax:+(1)-(207)-8425503

<b>11.</b>	<b>Event</b>	<b>KRAKDENT</b>
	<b>Date</b>	Mar 05-07, 2011
	<b>Venue</b>	Targi w Krakowie Exhibition Centre Krakow, Poland
	<b>Highlights</b>	It is the premier exhibition in Poland for Dental and Pharmaceutical industry. This is the 19th edition of the event. The will provide the opportunity to meet all the Dental and Pharmaceutical industry's professional under one roof. This is the only platform where exhibitor and visitor can meet and exchange their ideas.
	<b>Contact Details</b>	Targi w Krakowie Ltd., 31-586, Centralna 41-A Street, Krakow, Poland Tel:+(48)-(12)-6445932; Fax:+(48)-(12)-6446141
<b>12.</b>	<b>Event</b>	<b>Pharma Asia</b>
	<b>Date</b>	Mar 12-14, 2011
	<b>Venue</b>	<b>Karachi Expo Center, Karachi, Pakistan.</b>
	<b>Highlights</b>	Pharma Asia is being organized at the most opportune time when the Government is looking forward to expand the developing industries of the Country, which have shown tremendous growth in the past few years. The Exhibition would serve as a comprehensive showcase of the latest in technology, equipment and machinery as well as allied services, while providing investors with a definite outlook of the regional Pharmaceutical industry.
	<b>Contact Details</b>	E- Commerce Gateway Pakistan Private Limited, C-17, KDA Scheme - I Off, Pakistan. Tel:+(92)-(21)-111222444; Fax:+(92)-(21)-34536330
<b>13.</b>	<b>Event</b>	<b>Health Industry Show</b>
	<b>Date</b>	Mar 16-18, 2011
	<b>Venue</b>	Tokyo International Exhibition Center (Tokyo Big Sight) Tokyo, Japan
	<b>Highlights</b>	It is by far the largest and most important exhibition and conference serving this rapidly growing market and attracts a huge audience of buyers and health industry professionals.
	<b>Contact Details</b>	CMP Japan Company Limited, Kanda 91 Building, 1-8-3, Kaji-Cho, Chiyoda-Ku, Tokyo, Japan. Tel:+(81)-(3)-52961020; Fax:+(81)-(3)-52961010
<b>14.</b>	<b>Event</b>	<b>Korea International Medical &amp; Hospital Equipment Show</b>
	<b>Date</b>	Mar 17-20, 2010
	<b>Venue</b>	COEX Korea Exhibition Center Seoul, Korea
	<b>Highlights</b>	It is the crucial platform for the Korea medical industry and public health service. It is the only show in Korea where you will see a complete range of new and innovative products and services in medical technology and IT equipment, diagnostics, rehabilitation, nursing and consumer medicine.
	<b>Contact Details</b>	Korea E & Ex, Inc., Room 2002, WTC 159-1 Samsung-Dong, Kangnam-Ku, Korea; Tel:+(82)-(2)-5510102; Fax:+(82)-(2)-5510103
<b>15.</b>	<b>Event</b>	<b>Pharmaceutical &amp; Technologies Exhibition</b>
	<b>Date</b>	Mar 22-24, 2011
	<b>Venue</b>	Dubai International Convention & Exhibition Centre Dubai, United Arab Emirates
	<b>Highlights</b>	it is recognized as an eminent pharmaceutical event which is held every year. The DUPHAT is 16th edition which provides an insight into the pharma world. It proves to be highly vital in emerging out as an ideal meeting point for various pharmacists, physicians, medical representatives etc.
	<b>Contact Details</b>	INDEX Conferences & Exhibitions Organisation Est. (A Member of INDEX Holding), Dubai Health Care City, Block B Office 203, 2nd Floor, Dubai, United Arab Emirates; Tel:+(971)-(4)-3624717; Fax:+(971)-(4)-3624718

<b>16.</b>	<b>Event</b>	<b>Medical Fair India</b>
	<b>Date</b>	Mar 25-27, 2011
	<b>Venue</b>	Pragati Maidan New Delhi, Delhi, India
	<b>Highlights</b>	For tapping emerging opportunities of medical sector. It is an international exhibition which acts as an ideal podium for displaying radiology & imaging equipment, physiotherapy equipment, Critical care/Emergency Equipment, Disinfection & Waste Management Systems and others. The event is arranged along with conferences, seminars for showcasing the various aspects of pharma world and is attended by medical professionals of all over world.
	<b>Contact Details</b>	Messe Duesseldorf India Pvt. Ltd., 1, Commercial Complex, 2nd Floor, Pocket H & J, Sarita Vihar, New Delhi - 110 076., India. Tel: +(91)-(11)-26971056; Fax: +(91)-(11)-26971746
<b>17.</b>	<b>Event</b>	<b>Bio Pharma Asia Convention</b>
	<b>Date</b>	Mar 28-31, 2011
	<b>Venue</b>	Marina Bay Sands Singapore Singapore, Singapore
	<b>Highlights</b>	It is uniquely positioned as Asia's only exhibition that showcases leading technocrats, solution and service suppliers across the entire value chain of the bio Pharma industry in Asia.
	<b>Contact Details</b>	Terrapinn Pte Limited, Wren House, 43 Hatton Garden, London, United Kingdom; Tel:+(44)-(20)-70921000; Fax:+(44)-(20)-72421548
<b>18.</b>	<b>Event</b>	<b>Biologic Manufacturing World Asia</b>
	<b>Date</b>	Mar 29-30, 2011
	<b>Venue</b>	Marina Bay Sands Singapore Singapore, Singapore
	<b>Highlights</b>	The conference aims at bringing together the global and Asian professionals of biopharma industry, so that they can share their experiences related to biologic manufacturing technology applications and outsourcing strategies. Be a part of this 4th Annual biologic manufacturing world Asia 2011 and learn to implement effective bioprocess strategies. It will focus on topics like best upstream & downstream processing to gain operational excellence, manufacturing advancements of biosimilar and vaccine production, future of biologic manufacturing facility designs etc. Be a part of this biopharma conference and get to know about the latest trends in pharma sector.
	<b>Contact Details</b>	Terrapinn Pte Limited, Wren House, 43 Hatton Garden, London, United Kingdom; Tel:+(44)-(20)-70921000; Fax:+(44)-(20)-72421548
<b>19.</b>	<b>Event</b>	<b>Logi Pharma</b>
	<b>Date</b>	Mar 29-31, 2011
	<b>Venue</b>	President Wilson Hotel Geneva, United States Of America
	<b>Highlights</b>	it is the annual gathering of senior-level pharmaceutical supply chain executives in Geneva, where over 120 Global Heads and VPs of supply chain, logistics and procurement gather to share best practice and identify solutions to the most prevalent challenges affecting pharmaceutical logistics.
	<b>Contact Details</b>	Worldwide Business Research, 535, Fifth Avenue, 8th, New York, United States Of America; Tel:+(1)-(888)-4826012; Fax:+(1)-(212)-8852798
<b>20.</b>	<b>Event</b>	<b>SouthEast Asian Healthcare &amp; Pharma Show</b>
	<b>Date</b>	Mar 29-31, 2011
	<b>Venue</b>	Kuala Lumpur Convention Centre (KLCC) Kuala Lumpur, Malaysia
	<b>Highlights</b>	It is a landmark event which is characterized as South East Asia's only dedicated event. The B2B event is said to connect various professionals from international medical fraternity. Various distributors, importers and others glance over latest dental equipment, surgical products, wellness equipment among others and enter into trading deals.
	<b>Contact Details</b>	ABC Exhibitions, No.8, 16/6C, 46350, Petaling Jaya, Malaysia. Tel: +(60)-(3)-79546588; Fax: +(60)-(3)-79542352

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<b>21.</b>	<b>Event</b>	<b>Healthcare Ireland</b>
	<b>Date</b>	Apr 05-06, 2011
	<b>Venue</b>	Royal Dublin Society Main Hall Complex Dublin, Ireland
	<b>Highlights</b>	It is designed to fill that gap by creating an environment for the presentation of advances in healthcare achieved through the application of science, technology and best practice in products, equipment, works and services. This is achieved by means of a series of conference presentations by key practitioners and suppliers and a major exhibition.
	<b>Contact Details</b>	Step Exhibitions Limited, Step House, North Farm, Tunbridge Wells, United Kingdom. Tel:+(44)-(1892)-518877; Fax:+(44)-(1892)-518811
<b>22.</b>	<b>Event</b>	<b>SouthEast Asian Healthcare &amp; Pharma Show</b>
	<b>Date</b>	Apr 06-08, 2011
	<b>Venue</b>	Kuala Lumpur Convention Centre, Kuala Lumpur, Malaysia.
	<b>Highlights</b>	It is a landmark event which is characterized as South East Asia's only dedicated event. The B2B event is said to connect various professionals from international medical fraternity. Various distributors, importers etc. glance over latest dental equipment, surgical products, wellness equipment and others enter into trading deals.
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<b>23.</b>	<b>Event</b>	<b>P-Mec</b>
	<b>Date</b>	Apr 18-20, 2011
	<b>Venue</b>	Tokyo International Exhibition Center (Tokyo Big Sight) Tokyo, Japan
	<b>Highlights</b>	it is the abbreviation of Pharmaceutical Machinery & Equipment Convention, which is the exhibition of machine and equipment for pharmaceutical studies development and manufacturing.
	<b>Contact Details</b>	CMP InformationIndustrieweg 54, P.O. Box 200, 3600 AE, Maarsen, The Netherlands. Tel:+(31)-(346)-559444; Fax:+(31)-(346)-573811
<b>24.</b>	<b>Event</b>	<b>Pharmac India</b>
	<b>Date</b>	Sep 17-19, 2011
	<b>Venue</b>	Gujarat University Exhibition Hall Ahmedabad, India
	<b>Highlights</b>	It is recognized as a focused exhibition for Pharma & Health care industry. It is 3 days exhibition which is aiming towards highlighting varied related medical products. It will prove to be a large hub of reputed professionals from pharmaceutical formulation, herbal products, veterinary drug, medical & disposal, pharmaceutical machinery & many other sectors.
	<b>Contact Details</b>	Orbitz Exhibitions Private Limited, 202, Navyug Industrial Estate, T. J. Road, Sewree, Mumbai, India. Tel:+(91)-(22)-24102801; Fax:+(91)-(22)-24102805