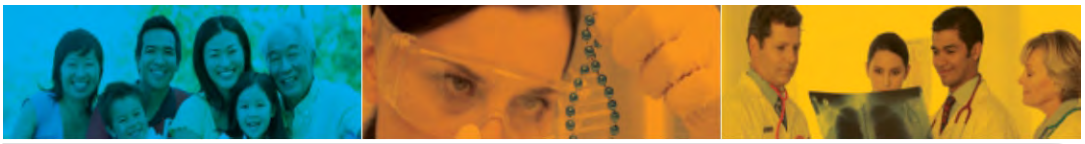

Clinical Research Newsletter Volume - 12, December 2014

LAMBDA

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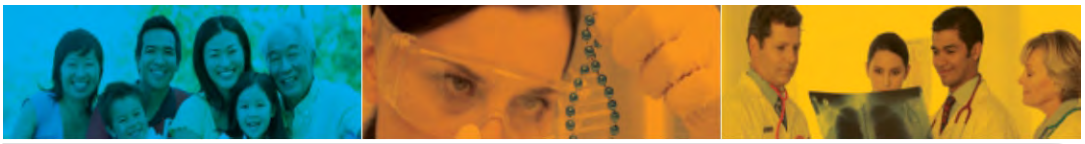


LAMBDA

GLOBAL NEWS

1.1. GSK seeks US FDA & European approval for mepolizumab — Nov 07, 2014

- GlaxoSmithKline plc has filed regulatory submissions in the USA and Europe for mepolizumab for approval as a maintenance treatment for patients aged 12 years and older with severe eosinophilic asthma or a history of exacerbations, identified by a blood eosinophil count of at least 150 cells per microlitre at the start of treatment or 300 cells per microlitre in the past 12 months.

1.2. US FDA issues preliminary feedback to Avanir's product AVP-825 — Nov 10, 2014

- Avanir Pharmaceuticals announced that the US Food and Drug Administration (US FDA) has issued preliminary written feedback to its New Drug Application (NDA) for AVP-825. It is a drug-device combination product consisting of low-dose sumatriptan powder, delivered intranasally utilising a novel Breath Powered delivery technology. The FDA has raised questions regarding the human factor validation study data submitted as part of the NDA. Human factor testing focuses on the interactions between people and devices. The goal of human factor testing is to evaluate use-related risks and confirm that users can use the device safely and effectively.

1.3. US FDA accepts Amgen's BLA for evolocumab — Nov 11, 2014

- Amgen's Biologics License Application (BLA) for evolocumab for the treatment of high cholesterol has been accepted by US FDA for review. Evolocumab is an investigational fully human monoclonal antibody that inhibits proprotein convertase subtilisin / kexin type 9 (PCSK9), a protein that reduces the liver's ability to remove low-density lipoprotein cholesterol (LDL-C), or "bad" cholesterol, from the blood. The BLA, submitted on August 27, 2014, is based on data from approximately 6,800 patients, including more than 4,500 patients with high cholesterol in 10 phase 3 trials.

1.4. Teva introduces liquid formulation of Treanda injection in US market — Nov 19, 2014

- Teva Pharmaceutical Industries Ltd., announced the commercial availability of a liquid formulation of Treanda (bendamustine HCl) Injection. This new liquid formulation removes the step of reconstituting lyophilized powder with sterile water prior to adding the required dose of medicine to the infusion bag and administering to a patient. By eliminating the need for reconstitution, preparation time for healthcare professionals is reduced.
- Treanda was approved by the FDA for the treatment of chronic lymphocytic leukemia (CLL) in March 2008. Treanda received its second approval in October 2008 for the treatment of patients with indolent B-cell non-Hodgkin lymphoma that has progressed during or within six months of treatment with rituximab or a rituximab-containing regimen.

1.5. Phase III trial with glioblastoma terminated at interim analysis due to early success — Nov 15, 2014

- Novocure™, a commercial stage oncology company, announced today that pre-defined, interim analysis of EF-14 trial data presented at the Society for NeuroOncology 2014 Annual Meeting in Miami. The trial involved testing of 'Tumor Treating Fields' (TTFields) delivered by the NovoTTF™-100A System in combination with standard-of-care temozolomide chemotherapy. TTFields extended both

progression-free survival (PFS) and overall survival (OS) compared to temozolomide alone in patients with newly diagnosed glioblastoma multiformis (GBM).

- Based on the interim analysis results, the Independent Monitoring Committee (IDMC) for the EF-14 trial recommended that the trial be stopped early and that Novocure provide access to TTFields for patients on the temozolomide alone arm.

1.6. EMA recommends approval of two new medicines, Exviera & Viekirax Nov 24, 2014

- The European Medicines Agency (EMA) has recommended a marketing authorization for Exviera (dasabuvir) and Viekirax (ombitasvir + paritaprevir + ritonavir) for the treatment of chronic hepatitis C virus (HCV) infection in adults in combination with other medicinal products. Exviera and Viekirax belong to a new generation of medicines that have high cure rates and have recently reshaped the way this disease is treated. Exviera targets the protein NS5B while Viekirax targets the proteins NS5A and NS3/4A which are essential for HCV replication.

DOMESTIC NEWS

2.1. Sanofi Pasteur launches pentavalent paediatric vaccine Shan5 in India Nov 11, 2014

- Sanofi Pasteur, the vaccines division of Sanofi, announced the launch of Shan5, its paediatric pentavalent vaccine developed and manufactured by its affiliate Shantha in India. The launch of Shan5 vaccine received prequalification status from the World Health Organization (WHO) in April 2014. Shan5's prequalification gives many more children in India access to the latest high-quality, fully-liquid, 5-in-1 vaccine.

2.2. Standard & Poor's report published about India pharmaceutical companies Nov 13, 2014

- Growth for Indian pharmaceutical companies is likely to get a boost as countries are increasingly focusing on affordable health care. According to a report titled "Indian Pharmaceutical Companies have a global opportunity, If They Conquer Compliance Issues," that Standard & Poor's Ratings Services published.

2.3. CPhI to release comprehensive India pharma market report Nov 17, 2014

- CPhI India will be releasing a comprehensive India pharma market report at CPhI India 2014. The report, conducted with the help of research partner Global Business Reports, will include thought-provoking analysis from key industry players e.g. Cipla, Piramal, Sun, Lupin, Aurobindo and Biocon, Government bodies (IBEF/Pharmexcil) and explore new growth areas emerging across the country. Now the tenth largest economy in the world and with global exports of around US$ 15 billion over the last 12 months, India is an innovation hub and a well-known focal point of the pharmaceutical industry and McKinsey and Company forecast a staggering total value of US$ 45 billion by 2020. Around 220 countries are sourcing pharma products from India, with the top 20 of India's pharmaceutical companies contributing to almost two-thirds of the country's total exports.

2.4. JCI & ASP unveil new infection prevention toolkit in Mumbai Nov 17, 2014

- In an effort to help people navigate the challenging healthcare scenario, for the first time, a US-based non-profit tax-exempt 501 organisation, Joint Commission International (JCI), and Advanced Sterilization Products (ASP), a Johnson & Johnson company, jointly revealed a new infection prevention toolkit recently in Mumbai. The infection prevention toolkit is developed by global experts.

- The infection prevention toolkit would also serve as a comprehensive guide, based on evidence-based processes, industry standards and guidelines and comprises of case studies and best practices and the need to initiate conversations and discussions around the same in the industry.

2.5. Importance of data integrity & GMP deliberated at IPAP Technical Conference Nov 20, 2014

- India has advantage over China because Indian pharma industry has more pharmacy personnel than China. Indian Pharma Industry needs to protect its brand image as quality manufacturer by learning to share its information in a befitting manner and focusing on behavioral aspects during audit. These were the thoughts shared by Ajit Singh, chairman, ACG Worldwide while delivering his message as the chief guest at IPA-Pharmexcil Technical Conference 2014.

2.6. Cipla enters strategic Europe-specific marketing pact with Serum Institute Nov 20, 2014

- Cipla Europe NV, a 100% subsidiary of Cipla Ltd and a global pharmaceutical company has entered a distribution agreement with Serum Institute of India Ltd.(SII), a global leader in the production of vaccines. Under the agreement, SII will develop and manufacture paediatric vaccines; Cipla will seek EMA approval and market the products in Europe. This collaboration with SII enables Cipla to enter into the vaccines segment, continuing our commitment to inclusive healthcare for the world. The vaccines will be manufactured in Serum's world class production facilities approved by WHO.

REGULATORY NEWS

3.1. EMA issues revised version of overarching biosimilars guideline Nov 07, 2014

- The European Medicines Agency (EMA) published the new version of its overarching biosimilars guideline, which will revise the agency's 2005 overarching guideline on similar biological medicinal products. The guideline outlines the general principles to be applied for biosimilars and describes and addresses the application of the biosimilar approach, the choice of the reference product and the principles for establishing biosimilarity.

3.2. WHO updates personal protective equipment guidelines for Ebola response Nov 04, 2014

- As part of WHO's commitment to safety and protection of healthcare workers and patients from transmission of Ebola virus disease, WHO has conducted a formal review of personal protective equipment (PPE) guidelines for healthcare workers and is updating its guidelines in context of the current outbreak. These updated guidelines aim to clarify and standardise safe and effective PPE options to protect health care workers and patients, as well as provide information for procurement of PPE stock in the current Ebola outbreak. The guidelines are based on a review of evidence of PPE use during care of suspected and confirmed Ebola virus disease patients.

DRUG APPROVALS AND LAUNCHES

4.1. Mylan launches generic Viramune in US market Nov 01, 2014

- Mylan, Inc, has announced the launch of its Nevirapine Extended-release tablets, 400 mg, which is the generic version of Boehringer Ingelheim's Viramune XR. Mylan received final approval from the US Food and Drug Administration (US FDA) for its Abbreviated New Drug Application (ANDA) for this

Product, which is indicated for combination antiretroviral (ARV) treatment of HIV-1 infection in adults and in children six to less than 18 years of age.

4.2. Glenmark's omeprazole DR capsules receives US FDA approval Nov 05, 2014

- Glenmark Generics, a subsidiary of Glenmark Generics Limited, has been granted final approval for its abbreviated new drug application (ANDA) from the United States Food and Drug Administration (US FDA) for omeprazole delayed release capsules, their generic version of Prilosec by AstraZeneca. Omeprazole DR Capsules are indicated for the short-term treatment of active duodenal ulcer in adults. The approval is for the 10, 20, and 40mg strengths of omeprazole.

4.3. Janssen's Invega Sustenna gets US FDA approval Nov15, 2014

- The US Food and Drug Administration (US FDA) has approved the Janssen Pharmaceuticals' supplemental New Drug Applications (sNDAs) for the once-monthly atypical long-acting antipsychotic Invega Sustenna (paliperidone palmitate) to treat schizoaffective disorder as either monotherapy or adjunctive therapy. The symptoms of schizoaffective disorder are complex and, without treatment, disabling. The FDA approved these sNDAs under priority review, which is a designation for drugs that, if approved, would offer significant improvement in the treatment of serious conditions.

4.4. Cell Source gets Italian regulatory nod for megadose drug combination Nov 15, 2014

- Cell Source, an immunotherapy and regenerative medicine company, announced its Megadose Drug Combination has been cleared for human clinical trials in Italy. Cell Source's proprietary Megadose Drug Combination is expected to increase bone marrow transplantation (BMT) success and survival. BMT is most often used for the treatment of blood cancers and is currently reserved mostly for patients with life threatening diseases, due to complications including transplant rejection.

4.5. US FDA grants Breaktrough Therapy designation for dupilumab Nov 21, 2014

- Regeneron Pharmaceuticals, and Sanofi announced that the US Food and Drug Administration (US FDA) has granted Breakthrough Therapy designation to dupilumab for the treatment of adults with moderate-to-severe atopic dermatitis who are not adequately controlled with topical prescription therapy and/or for whom these treatments are not appropriate. Dupilumab is an investigational therapy blocking IL-4 and IL-13, two cytokines required for the Th2 immune response. The designation is based on positive results from phase 1 and 2 clinical trials.

4.6. US FDA approves Valeant's Onexton gel Nov 27, 2014

- Valeant Pharmaceuticals International has received approval from the Food and Drug Administration (FDA) for Onexton gel (clindamycin phosphate and benzoyl peroxide), 1.2 per cent/3.75 per cent, for the once-daily treatment of comedonal (non-inflammatory) and inflammatory acne in patients 12 and older. Acne vulgaris is a common skin disorder that affects 40 to 50 million people in the United States.

4.7. EU approves Rezolsta in combo with other ARV for HIV-1 infection Nov 27, 2014

- Janssen-Cilag International NV (Janssen) announced that the European Commission (EC) has approved the use of Rezolsta (darunavir/cobicistat) in combination with other antiretroviral (ARV) medicinal products for the treatment of human immunodeficiency virus-1 (HIV-1) infection in adults aged 18 years or older. The decision from the EC follows a Positive Opinion recommending the use of Rezolsta from the Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency (EMA) in September 2014. Rezolsta is a new once-daily, fixed-dose combination tablet containing darunavir and the pharmacokinetic enhancing or "boosting" agent cobicistat (marketed as Tybost by Gilead Sciences, Inc.).

DRUGS IN DEVELOPMENT AND CLINICAL TRIALS

5.1. Glenmark starts phase II EMPIRE trial to evaluate vatelizumab Nov 05, 2014

- Glenmark has enrolled first patient in a multicenter phase II clinical trial to evaluate Genzyme's investigational infusion therapy vatelizumab in patients with relapsing remitting multiple sclerosis (RRMS). The trial, called EMPIRE, is designed to assess the efficacy of vatelizumab vs. placebo in RRMS patients. The safety, tolerability and pharmacokinetics of vatelizumab will also be assessed.

5.2. Sage Therapeutics Reports Positive Top-Line Phase 2 Data of SAGE-547 Nov 11, 2014

- SAGE Therapeutics announced that in a Phase 1/2 clinical trial of SAGE-547, an allosteric modulator of both synaptic and extra-synaptic GABAA receptors, all primary and secondary endpoint targets were achieved in patients with super-refractory status epilepticus (SRSE), a critical condition in which the brain is in a state of persistent seizure. In 73 percent of patients, treatment with SAGE-547 allowed for patients to be successfully weaned off their anesthetic agent.

5.3. Amgen/AZ psoriasis drug beats J&J's Stelara Nov 11, 2014

- AstraZeneca and Amgen have presented late-stage data showing that its investigational psoriasis drug broadalumab proved superior to Johnson & Johnson's big-selling Stelara in achieving total skin clearance. Two doses of brodalumab, which targets the IL-17 receptor, were tested in more than 1,800 patients with moderate-to-severe plaque psoriasis.

5.4. R-Tech Ueno completes study of RU-101 to treat severe dry eye Nov 12, 2014

- R-Tech Ueno, a bio venture company, announced the completion of a phase I/II clinical study of recombinant human serum albumin-containing ophthalmic solution (development code: RU-101) for the treatment of severe dry eye. The design of this study was a placebo (without the active ingredient) controlled, double-masked study in severe dry eyes patients in the United States to confirm the safety and initial efficacy of RU-101 ophthalmic solution in two stages. Using the RU-101 ophthalmic solution of maximum dosage safety of which had been confirmed at Stage I (equivalent to phase I), the safety and effectiveness were evaluated in the Stage II (equivalent to early phase II) in 104 patients (RU-101 ophthalmic solution, 52 patients; placebo ophthalmic solution, 52 patients.

5.5. Novartis presents positive results of AIN457 in ankylosing spondylitis Nov 17, 2014

- Novartis announced results from the MEASURE 1 and MEASURE 2 pivotal phase III studies of AIN457 (secukinumab) in ankylosing spondylitis (AS). In the studies, secukinumab met the primary endpoint demonstrating rapid and statistically significant improvements versus placebo in the signs and symptoms of AS. More than 60% of secukinumab 150 mg patients achieved an ASAS20 response, a standard tool used to assess clinical improvement in AS, in MEASURE 1 ($p<0.0001$) and MEASURE 2 ($p<0.001$). This is in comparison to 28.7% and 28.4% of placebo patients who achieved ASAS20 in MEASURE 1 and MEASURE 2, respectively.

5.6. Gilead announces Harvoni study results in chronic hepatitis C patients Nov 13, 2014

- Gilead Sciences, announced results from several phase 2 and phase 3 studies evaluating investigational uses of Harvoni (ledipasvir 90 mg/sofosbuvir 400 mg) for the treatment of chronic hepatitis C virus (HCV) infection in patients with limited or no treatment options, including patients with decompensated cirrhosis, patients with HCV recurrence following a liver transplant and patients who failed previous treatment with other direct acting antivirals. These data will be presented at the 65th Annual Meeting of the American Association for the Study of Liver Diseases (The Liver Meeting 2014) in Boston.

5.7. Synthetic Biologics to start phase 1a &1b trials of SYN-004 Nov 25, 2014

- Synthetic Biologics, Inc., a developer of pathogen-specific therapies for serious infections and diseases, with a focus on protecting the microbiome, announced that its Investigational New Drug (IND) application which was submitted to the US Food and Drug Administration (FDA) in October will be proceeding into clinical trials for the development of the company's oral beta-lactamase enzyme SYN-004 for the prevention of Clostridium difficile (C. difficile) infection (CDI), antibiotic-associated diarrhea (AAD) and secondary infections.

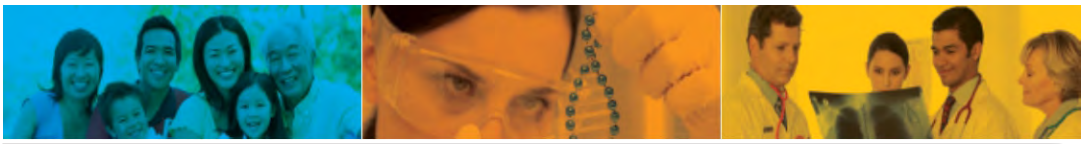
MERGER, ACQUISITIONS AND COLLABORATIONS

6.1. Abbott to acquire medical device company Topera Inc for $250 million Nov 01, 2014

- Abbott has entered into an agreement to purchase Topera, Inc., a private, venture-backed medical device company focussed on developing innovative electrophysiology technologies to improve the diagnosis and treatment of atrial fibrillation, one of the most common heart rhythm disorders in the world. Through this acquisition, Abbott enters the catheter-based electrophysiology market, an approximately $3 billion global market that has been growing annually at double-digit rates.

6.2. MedImmune to acquire Definiens for $150 million Nov 05, 2014

- MedImmune, AstraZeneca's global biologics research and development arm, has entered into an agreement to acquire Definiens, a private company that has pioneered a world-leading imaging and data analysis technology, known as tissue phenomics which dramatically improves the identification of biomarkers in tumour tissue. Under the terms of the agreement, MedImmune will acquire 100 per cent of Definiens' shares for an initial consideration of $150 million and make additional predetermined milestone payments.



LAMBDA

PATENT (NEW APPROVAL/ LITIGATION/SETTLEMENTS)

7.1. Levolta Pharmaceuticals gets US patent for novel therapy Nov 03, 2014

- Levolta Pharmaceuticals, an emerging leader in developmental osteoarthritis (OA) therapy, announced recently that the US Patent and Trademark Office has awarded the company a patent for its novel VOLT01, a derivative of zoledronic acid (ZA), a proposed commercial product that has shown promise as a disease-modifying drug in clinical trials. US Patent 8,859,530 covers co-administration of steroids and zoledronic acid to prevent and treat osteoarthritis.

7.2. Supernus' topiramate product, Trokendi XR gets US patent Nov 27, 2014

- Supernus Pharmaceuticals, a specialty pharmaceutical company focussed on developing and commercialising products for the treatment of CNS diseases, announced the issuance of a fifth patent (number 8,889,191) by the United States Patent and Trademark Office (USPTO) covering Trokendi XR, its novel once-daily extended-release topiramate product. The patent provides protection for the product with expiration that is no earlier than 2027.

TECHNOLOGY NEWS

8.1. KLOXs' photo-converter gel, LumiHeal receives European CE mark Nov 10, 2014

- KLOX Technologies Inc., a leading life sciences specialty pharma company, has received CE mark approval in Europe for its topical photo-converter gel, LumiHeal, as a Class IIb Medical Device for the treatment of acute and chronic wounds. This gel is part of KLOX's innovative, non-invasive, and patented BioPhotonic platform which is designed to promote healing of wounds while addressing bacterial contamination. KLOX plans to independently commercialize LumiHeal in Europe in 2015.

8.2. US FDA approves Kubtec's digital radiography system for neonates Nov 24, 2014

- The US Food and Drug Administration (FDA) has approved Kubtec's KUB 250, the first truly portable low-dose digital X-ray system dedicated to the neonatal intensive care unit (NICU). Compact and lightweight (24" x 24" footprint; 200 lbs.), the KUB 250 is the world's highest resolution low-dose imaging system available for neonates. When imaging high risk infants in the NICU, it is critical to track subtle changes in pathology while maintaining the focus on low dose. Present day digital X-ray systems maintain pixel resolution in the 150-170 micron range, thereby sacrificing high resolution images in order to keep the radiation dose low.

8.3. Researchers develop new device for comfortable mammography for women Nov 24, 2014

- Researchers have developed a new device that may result in more comfortable mammography for women. According to a study being presented next week at the annual meeting of the Radiological Society of North America (RSNA), standardising the pressure applied in mammography would reduce pain associated with breast compression without sacrificing image quality. Compression of the breast is necessary in mammography to optimise image quality and minimise absorbed radiation dose. However, mechanical compression of the breast in mammography often causes discomfort and pain and deters some women from mammography screening.