Lambda Research Newsletter

September 2020

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Research Accelerated

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GLOBAL NEWS

1. Novel technique for brain network

An assistant professor at the Texas University will develop a novel technique for analysis of structure and function of neural networks in the brain using algorithms. It is very difficult to apply learning technique to brain network analysis. The professor will create deep learning pipeline that could help new convolution neural network for graph classification.

TEXAS
The University of Texas at Austin

Convolution neural networks have been used in image recognition and classification but not for graph data. This new convolution will explore the spatial relationship between graph nodes in a dual space to learn topological features for brain networks.

This is a novel unique technique with great potential to analyzing the brain and its networks.

Source: news-medical.net

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GLOBAL NEWS

2. Signaling pathway cancer cells gain access to enter the bloodstream

The researchers at the Rockefeller University have found that neurons can be an appropriate signaling pathway to metastasize breast and lung tumors. The study has published in the Journal of *"Nature"*.

The researchers have described how cancer cell gain access to nerve signal for entering bloodstream. This is an unseen aspect of tumors relationship with their surroundings.

The researchers have hypothesized that inner lining of the cell of the blood vessels send a signal that instructs the cancer cell. They have developed technology in the lab using a combination of sophisticated genetic, molecular, and biochemical approaches. They have identified the protein SLIT2 that is normally produced by neurons, in the nervous system this signaling molecule (SLIT2) is known to help guide nerve-cell extensions as they travel from one part of the brain to the other.

The researchers have found that breast and lung cancer cells use this mechanism to coax blood-vessel cells into making and releasing SLIT2 and cancer cells start migrating. The first silenced DNA to produce double stranded RNA, which acts as a signal to triggers their own movement. This SLIT2 and another pathway could potentially serve as diagnostic.

Source: news-medical.net

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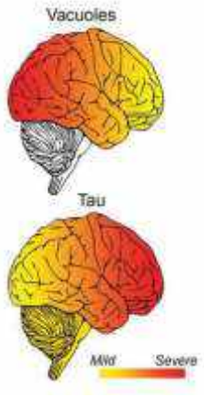
GLOBAL NEWS

3. New genetic disease discovered

A research team of Penn Medicine has discovered a new rare genetic type of dementia. The discovery was focused on new pathway that leads to protein build up in the brain and causes new disease as well as neurodegenerative diseases. The study has published in Journal of "*Science*".



The researchers have found novel mutation of Valosin-containing protein (VCP) in the brain, tau proteins are building up in areas that are degenerating and neurons with empty holes in them, it is known as vacuoles. The team named newly disease Vacuolar Tauopathy.

This discovery describes a new biologic function of VCP and defines a new mechanism that leads to tau protein aggregation, and suggest a new possible therapeutic target for the treatment of neurological disease.

Source: upenn.edu

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GLOBAL NEWS

4. Meditation and yoga heals chronic pain depression and disability

A mindfulness-based stress reduction (MBSR) therapy has found beneficial for chronic pain and depressive patients according to the study published in the Journal of *"The American Osteopathic Association"*.

There were 89% respondents has experienced MBSR helps in their pain while 11% remained stable. In the US, chronic pain is a common and serious medical condition that affects 100 millions of people.

The small scale eight-week study was performed, during the study period the participants were received instruction of mindfulness meditation and mindful hatha yoga. The study found significant improvements in patients with suffering from chronic pain, depression and disability. Some patients experience a similar drop from the use of an antidepressant.

Mindfulness-based meditation and yoga can help restore patient's mental and physical health and can be effective alone or in combination with other treatments. The study finding demonstrated the meditation and yoga can be a viable option for chronic pain.

Source: sciencedaily.com

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PHARMA INDIA

1. Gujarat FDCA grants more licenses to medical oxygen for COVID-19 patients

The Gujarat Food and Drug Control Administration (FDCA) has urgently granted 10 more licenses of medical oxygen for COVID 19 patients.

Currently, Gujarat is producing 200 metric tonnes of medical oxygen on a daily basis. With 10 more licenses the state will provide 800 metric tonnes oxygen per daily basis. According the data of official sources, the state availability of over 5.2 lakh cubic meters oxygen against the requirement of 62,860 cubic meters oxygen.

All Gujarat healthcare institutions have directed to comply Essential Commodities (EC) Act and provide medical oxygen free of cost. Manufactures are producing medical oxygen in compliance with standards Indian Pharmacopoeia (IP) and labeling requirements as per the Drugs and Cosmetics (D&C) Act and Rules.

Oxygen therapy is the most effective supportive measure in COVID-19 patients. Children with emergency signs should receive oxygen therapy during resuscitation.

Source: pharmabiz.com

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PHARMA INDIA

2. US-India collaboration for global recovery from COVID-19

The US hailed its partnership with India for protective equipment and medical supplies during this pandemic situation.

A senior of US department said that India has been an important partner for the US since the beginning, when the countries were desperate to search out vaccines for COVID 19.

The US-IND collaboration is the best example of positive global impact. Currently, COVID-19 vaccine being manufactured by Serum Institute of India would be made available by the end of January 2021.

India is the world's largest vaccine producer. Serum Institute of India is the world's largest maker of vaccines by volume.

Source: indiawest.com

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PHARMA INDIA

3. Traditional medicines shown great results

The clinical trial has been performed in three hospitals using combination treatment of ayurvedic formulations (Immunofree, Reginmune). The trial was approved by the Clinical Trials Registry- India (CTRI).

Patients who were undergoing traditional treatments they were resolving most symptoms earlier than those using allopathic medicines. According to the report, on day five more than 85% of patients tested negative for corona virus while 60% patients tested negative undergoing conventional treatment. On day 10 all patients were corona free.

The country has reached 61,45,292 cases of corona virus, which consists of 9,47,576 active cases, 51,01,398 cured and discharged.

Source: dnaindia.com

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PHARMA INDIA

4. AYUSH signs MoU to promote medicinal plant cultivation

The National Medicinal Plants Board (NMPB) under the Union Ministry of Ayush has signed Memorandum of Understanding to promote medical plant cultivation.

The conservation of plant genetic resources is an essential part of bio-diversity conservation. The medicinal plantation can be gainfully utilized for quality raw materials for medicines.

Medicinal plants are regarded as huge resources of traditional medicines and are being used for thousands of years in the health care system.

According to the MOU, the bodies of herbal industries would provide buyback guarantee to the farmers on medicinal plant cultivation and collection.

India ~~is as~~has rich variations of medicinal plant resources. Currently, the natural resources are depleted due to various developmental activities. There is a need to conserve these resources and make sustainable utilization of them.

Source: pharmabiz.com

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REGULATORY ROUND-UP

1. USFDA has published new version for medical device

A new version of the guideline of ISO 10993-1 “Biological Evaluation of Medical Devices – Part 1: Evaluation and Testing within a Risk Management Process” has been published by the USFDA to support medical devices application. There are no major significant changes in the 2020.

New version of ISO 10993-1 was already approved in April 2018, but still not been adopted as European standards. ISO 10993-1: 2018 was introduced an additional category of the device with < 1 minute duration of contact for which biocompatibility testing may not be required.

Manufacturers who have followed ISO 10993-1: 2018 for the development of their biocompatibility testing programme, they have not to perform additional testing before FDA submission.

Source: regulis.com

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REGULATORY ROUND-UP

2. EMA require clinical data publication for COVID-19 related treatments

During the corona virus pandemic as part of the exceptional transparency measures, the European Medicines Agency (EMA) will require publication of clinical data for COVID-19 related treatments and preventions (medicines and vaccines).

As soon as possible the pharmaceutical companies should contact EMA for concerning publication of clinical data if they plan to submit an application for COVID-19 related products.

The suspension of clinical data publication does not apply to COVID-19 related products. The publication is still suspended until further notice for medicine which is not related COVID 19.

Source: regulis.com

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REGULATORY ROUND-UP

3. Ireland's HPRA updated guidelines

Ireland's Health Products Regulatory Authority (HPRA) has updated two guidelines:

- Good Distribution Practices (GDP)
- Wholesaling of Medicinal Products for Human Use

HPRA will allow the use of part-time responsible persons (RPs) has provided, they are continuously present at the site and to perform their duties and able to maintain oversight of their responsibilities when they are not present in person. There is new section added to explaining the effect of regulatory changes on the medicinal products.

In wholesaling and brokering guideline, they have added new legislative basis for the advice:

- The safety features regulations
- Amendment to the obligations on holders of wholesaler's authorizations

Source: regulis.com

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REGULATORY ROUND-UP

4. MHRA guidance for medical devices future requirements

The Medicines and Healthcare products Regulatory Agency (MHRA) has decided the UK requirements on device certification in future, conformity marking and registration.

Medical devices will be regulated under the Medical Devices Regulations 2002. For the UK from the 1st Jan 2021 a new regulatory framework will be introduced resulting in the UK Conformity Assessed (UKCA) mark. However, conformity marking and EU-based Notified Bodies (NB) certificates will continue to be recognized until the end of June 2023.

MHRA registration will be requiring on the UK market MHRA. UK Responsible Person (UKRP) will be assign for Non-UK manufacturers. There is a grace period for these notifications based upon classification, but the highest risk products need to be registered by April 2021:

- **Four months**: Active implantable medical devices, Class III medical devices, Class IIb implantable medical devices, IVD list A
- **Eight months**: Class IIb non-implantable medical devices, Class IIa medical devices, IVD list B, Self-test IVDs
- **12 months**: Class I medical devices, General IVDs.

In Northern area of Ireland the UKCA mark will not be recognized, therefore EU devices in this market will still require CE marking. Conformity marking UK (NI) will also be introduced specifically for this market, EU Medical Device Regulation (MDR) and In-Vitro Device Regulation (IVDR) will be apply in Northern area. UKRP will be required if the manufacturer is located in the EU, EEA or third country.

Source: regulis.com

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MERGERS /ACQUISITIONS /COLLABORATIONS

1. BMS has signed agreement with MyoKardia

Bristol Myers Squibb (BMS) has signed agreement with biopharma firm MyoKardia with transaction valued at $13.1bn. The main goal of the MyoKardia is the drug discovery and development of targeted treatments for cardiovascular diseases.

According to the deal, BMS will purchase all outstanding shares of MyoKardia valued at $225/share. The company will secure MyoKardia's investigational cardiovascular drug mavacamten.

Mavacamten is potential to treat symptomatic obstructive hypertrophic cardiomyopathy (HCM). HCM is a chronic, progressive heart disease which is characterized by contraction of excessive heart muscle and dysfunction of left ventricle, ultimately that creates cardiac dysfunctions.

The company plans to submit a new drug application to the USFDA in the first quarter of next year for the use of mavacamten in HCM based on Phase III EXPLORER-HCM trial.

Source: pharmaceutical-technology.com

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MERGERS /ACQUISITIONS /COLLABORATIONS

2. Gilead Sciences acquired Immunomedics for breast cancer drug

Gilead Sciences has acquired Immunomedics for approximately $21 billion at $88 per share. The agreement will provide Gilead with TrodelvyTM (sacituzumab govitecan-hziy).

TrodelvyTM is a Trop-2 first in class antibody drug conjugate (ADC). Drug has received USFDA approval for the treatment of metastatic triple negative breast cancer (mTNBC).

The drug is an approved transformational medicine for cancer that is challenging to treat. The acquisition represents the significant progress in both the companies to build strong and diverse oncology portfolio.

Source: europeanpharmaceuticalreview.com

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MERGERS /ACQUISITIONS /COLLABORATIONS

3. Dr. Reddy's collaborated with RDIF for sputnik V COVID-19 vaccine

The Indian Pharmaceutical company Dr. Reddy's Laboratories has collaborated with the Russian Direct Investment Fund (RDIF) for the clinical trials and Sputnik V COVID-19 vaccine.

RDIF will supply 100 million doses of vaccine to Dr Reddy's Lab. after received Indian regulatory approval.

Currently, Sputnik V is in clinical trials, which is developed by the Gamaleya National Research Institute of Epidemiology and Microbiology in Russia based on human adenoviral vector platform. This scientifically validated platform will provide a safe option to fight against COVID-19.

The human adenoviral vectors is the heart of the Russian vaccine and it has been tested >250 clinical trial over decade.

Source: pharmaceutical-technology.com

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MERGERS /ACQUISITIONS /COLLABORATIONS

4. AstraZeneca acquired Dogma Therapeutics for PCSK9 inhibitor

AstraZeneca has signed an agreement to buy oral PCSK9 inhibitor from Dogma Therapeutic. PCSK9 is a protein that regulates the low-density lipoprotein (LDL) or bad cholesterol level in blood.

According to the agreement, PCSK9 inhibitors are small molecules, which are designed to bind with PCSK9. In preclinical models, PCSK9 inhibitors are blocked its activity and lower LDL cholesterol.

AstraZeneca plans to acquire programme in to clinical development for dyslipidemia and also focuses on familial hypercholesterolemia a common genetic disorder that leads to high cholesterol.

Source: pharmaceutical-technology.com

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DRUGS: APPROVALS AND LAUNCHES

1. USFDA approved GSK's Nucala for hypereosinophilic syndrome

The US Food and Drug Administration has approved GlaxoSmithKline's nucala for the treatment of hypereosinophilic syndrome (HES). Nucala is the first approved biologic for HES.

Hypereosinophilic syndrome is a complex, life-threatening and rare disease, it is a type of white blood cell and it is characterized by overproduction of eosinophils. Fever and malaise to respiratory and cardiac problems are the complications of HES, if it is not treated the symptoms become worse.

The drug has been used in the US for the adult and pediatric patients (12 year and older) who are suffering from HES without non-haematologic secondary causes.

Nucala has approved based on the pivotal phase III clinical trial that demonstrate positive results, the data shown less than 50% has experienced HES flare with nucala compared to placebo over the 32-week of study.

Drug is already approved as maintenance therapy for severe eosinophilic asthma and granulomatosis with polyangiitis (EGPA).

Source: pharmatimes.com

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DRUGS: APPROVALS AND LAUNCHES

2. USFDA approved new drug combination for Mesothelioma

The USFDA has approved a new drug combination nivolumab/ipilimumab for the treatment of inoperable pleural mesothelioma, this is the first systemic treatment for the mesothelioma.

The drugs are the combinations of immunotherapy and both are complement of each other. Pleural mesothelioma is a virulent membrane cancer surrounding the lungs, asbestos exposure is the main reason of the mesothelioma.

Currently, Alimta (pemetrexed) is used for the treatment of mesothelioma drug, but it was breakthrough not curable option for mesothelioma.

Source: survivingmesothelioma.com

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DRUGS: APPROVALS AND LAUNCHES

3. Centaur Pharma launches new chemical entity

Centaur Pharmaceuticals has launched new chemical entity WOXheal for the treatment of diabetic foot ulcer. WOXheal topical solution consists of NCE, Diperoxochloric acid.

WOXheal is working on dual mechanism of action, it has antibacterial action against gram negative and positive bacteria and also promoting growth of fibroblast cells.

The company had performed randomized clinical trial across the India. They had enrolled patients with non healing diabetic foot ulcer patients. After WOXheal treatment data showed reduction in the size of the ulcer and within 6-8 weeks 75% patients achieved complete healing without any side effects.

The results of this data were submitted to the Indian Regulatory Authority. Manufacturing and marketing approval was granted for WOXheal. Drug will be readily available in the India by the end of the month.

Source: economictimes.indiatimes.com

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DRUGS: APPROVALS AND LAUNCHES

4. Janssen's SIMPONI ARIA has received USFDA approval

The USFDA has approved Janssen's SIMPONI ARIA (golimumab) for the treatment of active polyarticular juvenile idiopathic arthritis (pJIA) and juvenile psoriatic arthritis (jPsA) in pediatric patients (ages 2 or older).

This is the first and only fully human anti-TNF-alpha biologic agent administered via intravenous infusion for pediatric use in both active pJIA and jPsA.

SIMPONI ARIA is an antibody which is suppress cell signaling protein tumor necrosis factor alpha (TNF- α). TNF-α is responsible for the inflammation. The drug is designed to reduce inflammation, decrease pain and damage in the joints.

SIMPONI ARIA is administered by an intravenous infusion, which takes about a half-hour. Starter doses are given four weeks and after which infusions are administered every eight weeks.

The drug approval was based on the Phase III clinical trial GO-VIVA (NCT02277444), sponsored by Janssen. This approval represents an important step for these children.

Source: juvenilearthritisnews.com

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DRUGS: DEVELOPMENT & CLINICAL TRIALS

1. Novavax conduct phase III trial for corona vaccine

Novavax will conduct Phase III clinical trial for candidate of COVID-19 vaccine. The aim of the study is to evaluate safety, efficacy and immunogenicity of the vaccine in patient's age between 18-84 with and without relevant co morbidity.

The trial is being conducted joined with the UK government's Vaccines Taskforce. The study has enrolled 25% of participants over the age of 65 and also prioritizes groups that are most affected with COVID 19.

Half of the participants will receive two intramuscular injections of the vaccine containing 5 µg of protein antigen with 50µg Matrix-M adjuvant while the other half of the trial will receive placebo. The study has two primary end points including occurrence of PCR-confirmed symptomatic COVID-19 and second is to occurrence of PCR-confirmed symptomatic moderate-to-severe COVID-19.

The primary efficacy analysis will focus on number of participants with symptomatic or moderate-to-severe COVID-19. The data from this trial is expected to support regulatory submissions for licensure in the UK, EU and other countries.

Source: pharmatimes.com

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DRUGS: DEVELOPMENT & CLINICAL TRIALS

2. Owlstone Medical has performed breath biopsy for detection of liver disease

Owlstone Medical has performed study of breath biomarker lemonine for detection of liver disease and they have demonstrated results from a study of breath-based diagnostic test. Liver disease includes nonalcoholic fatty liver disease (NAFLD) and associated nonalcoholic steatohepatitis (NASH).

The study investigated the use of breath biomarker limonene to measure liver function and stage liver disease in 32 cirrhosis and 12 cirrhotic hepatocellular-carcinoma patients compared with 40 patients of control group.

Each group was analyzed by Owlstone biopsy platform, data shown positive results 73% sensitivity and 77% specificity and find alteration in liver function. Limonene could be used as a marker of liver metabolic capacity.

Source: pharmatimes.com

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DRUGS: DEVELOPMENT & CLINICAL TRIALS

3. Bristol Myers Squibb has conducted Phase III trial for esophageal cancers

Bristol Myers Squibb has performed Phase III CheckMate-577 trial for the treatment of esophageal cancers. BMS has presented result at the 2020 European Society for Medical Oncology (ESMO) virtual congress.

The study had enrolled esophageal or gastroesophageal junction cancers, who had previously received neoadjuvant chemoradiation and tumor resection.

The median disease-free survival increased in patients treated with Opdivo (nivolumab) compared to receiving placebo.

The median duration of treatment for patients in the Opdivo arm was 10.1 months compared to nine months in the placebo arm. The safety profile is well tolerated with an acceptable safety profile compared to placebo.

Opdivo has demonstrated a benefit in the adjuvant setting that indicating the potential for Opdivo to become a new standard of care for these patients. BMS plans to discuss the results from the CheckMate-577 study with global health authorities in the next few months.

Source: pharmatimes.com

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DRUGS: DEVELOPMENT & CLINICAL TRIALS

4. New drug shows potential therapy for childhood neuroblastoma

The researchers at the Institute of Cancer Research have discovered new drug fadraciclib for the treatment of aggressive childhood cancer neuroblastoma. Neuroblastoma is a nerve tumor and it is difficult to treat and often reoccurs after treatment. Current existing therapies neuroblastoma is particularly intense and causes long-term side effects.

Mutation in the N-Myc gene causes aggressive forms of neuroblastoma that is the good target for treatment for rare cancer type. fadraciclib is blocking the activity of N-Myc.

Fadraciclib has already approved for safety profile in adults. In preclinical study, the drug slow down and stabilized tumor growth and after combined with chemotherapy the drug shrank the tumors.

Fadraciclib can be a potential treatment option for the aggressive childhood cancer neuroblastoma

Source: pharmatimes.com

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PATENTS: NEW APPROVALS /LITIGATIONS /SETTLEMENTS

1. Dr. Reddy's has settled patent litigation with Celgene

Dr. Reddy's Laboratories Ltd has settled its patent litigation regarding Revlimid (lenalidomide) capsule with Bristol Myers Squibb's subsidiary Celgene. Revlimid is used in the treatment of multiple myeloma and myelodysplastic syndromes.

As part of the settlement, Dr Reddy's settled all the outstanding claims of Revlimid litigation. After March 2022 Celgene has agreed to provide the license to sell volume-limited amounts of generic lenalidomide capsules in the US.

Dr. Reddy's Lab also got sell license of generic lenalidomide capsule in the US market without volume limitation.

Source: timesofindia.indiatimes.com

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PATENTS: NEW APPROVALS /LITIGATIONS /SETTLEMENTS

2. Collegium settlement with Teva resolving patent litigation

Collegium Pharmaceutical has settled agreement with Teva Pharmaceutical USA for resolving the patent litigation.

The patent litigation is regarding Teva's Abbreviated New Drug Application (ANDA) received approval to market a generic version of Xtampza ER prior to the expiration of Collegium's patents.

According to the settlement agreement, beginning on or after 2nd September 2033 the U.S. Department of Justice, Collegium will grant Teva a license to market its generic version of Xtampza ER in the US, Teva has agreed to a judgment. Additional details are confidential regarding the settlement.

Source: globenewswire.com

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PATENTS: NEW APPROVALS /LITIGATIONS /SETTLEMENTS

3. Orexo filed patent litigation against Sun Pharma

In the US District Court of New Jersey, Orexo has filed patent litigation against Sun Pharmaceutical Industries Limited.

The lawsuit is that the Sun Pharma has filed Abbreviated New Drug Application in the US to sell generic versions of Orexo's ZUBSOLV® sublingual tablets prior to expiration of the patents listed in an orange book.

Orexo claimed against Sun Pharma for US Patent Nos. 8,470,361; 8,658,198; 8,940,330; 9,259,421 and 9,439,900. The patents will expire from December 2027 to September 2032.

FDA has on hold from approving Sun's ANDA for 30 months or till the decision of district court.

Source: prnewswire.com

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PATENTS: NEW APPROVALS /LITIGATIONS /SETTLEMENTS

4. B. Braun has previously settled litigation brought by Mallinckrodt

B. Braun Medical has previously settled a patent infringement litigation brought by Mallinckrodt Hospital Products.

B. Braun is a lead in infusion therapy, pain management, development, and manufactures innovative medical products and services to the healthcare industry.

According to the settlement agreement, B. Braun received approval for non exclusive license to launch its (acetaminophen) injection in the US having dosage 1000mg/100 mL and 500mg/50 mL on 6th December 2020 or may be earlier.

Source: prnewswire.com

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TECHNOLOGY /NDDS

1. Wearable ketamine device for pain management patient

Bexson Biomedical has joined with Stevanato Group to develop a wearable ketamine delivery device for pain management patients. Bexson is developing a proprietary subcutaneous injection of ketamine with an increased bioavailability and a higher pH level.

For the ketamine formulation, Stevanato will make a modified version of insulin delivery device with anti-tampering and anti-abuse technologies. The device includes a disposable pod, a needle and a bluetooth-enabled control unit to administer doses.

Ketamine can be an effective treatment for suicidal ideation and treatment resistant depression. National Institute of Health found that ketamine increases production of glutamate neurotransmitter and leads to the development of neural pathways that interrupt depressive thoughts.

USFDA has approved Johnson & Johnson's ketamine-derived nasal spray for the treatment of depression, which is the first approved depression treatment in decades.

Currently, Bexson is still in pre-clinical development. The companies will plans to launch a phase I clinical trial in 2021. Bexson's wearable ketamine delivery system could be approved by the FDA for pain management by 2026 if all goes well.

Source: forbes.com

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TECHNOLOGY /NDDS

2. NIST developed 3D soft objects at high resolution

National Institute of Standards and Technology
U.S. Department of Commerce

The researchers at the National Institute of Standards and Technology (NIST) have developed a new technique for 3D print soft objects at a higher resolution then previously.

In this latest technique uses X-rays or electron beam to crosslink the gels and help to create complex structure at nanometer scale. The technique could have potential for regenerative medicine.

This method has the advantage of depending on focused beams that can create fine structures within the printed objects. Here does not require any additional cross linking molecules.

Previously, radiation was used and it could be operated within vacuum and it impossible to making print gel structures due to evaporation of printed liquid before forming gel. In this new technique the researchers have used ultrathin silicon nitride layer between the vacuum and the liquid to prevent evaporation and allowing the X-rays or beam to affect the liquid.

The create structures are 1,000 times thinner than human hair.

Source: medgadget.com

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TECHNOLOGY /NDDS

3. New smart drug delivery system to treat neurological disorders

A research team from Rutgers University has developed a smart drug delivery system that helps to treat neurological disorders and reduces inflammation.

The system uses implanted biomaterials in the body and protects nerve fibers that connect nerve cells of injured neural tissues. The study has published in the *"Journal Advanced Material"*.

Major regenerative medicines have potential for treating neurological disorders (spinal cord injuries, traumatic brain injuries, Alzheimer's disease, Parkinson's disease, stroke) but they can lead to adverse events and increase risk of infection due to suppressing the immune system.

To solve this problem, the researchers have developed innovative, multifunctional and reliable drug delivery system that uses nano-biomaterials that consist of ultrathin nanomaterials, sugar polymers and neural proteins that release an anti-inflammatory molecule (methylprednisolone). This nano-biomaterial can create a favorable micro-environment to help tissue repair after neurological injury.

Source: sciencedaily.com

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TECHNOLOGY /NDDS

4. Nanotechnological drug delivery system effectiveness for melanoma

The researchers at the Tel Aviv University have developed an innovative nanotechnological drug delivery system for the treatment of aggressive skin cancer melanoma. The study has published in "*Advanced Therapeutics*".

The nanocarrier is biocompatible and degradable polymer that includes units of glutamic acids. It consists of two drugs together belonging different families (BRAF inhibitors (Dabrafenib) and MEK inhibitors (Selumetinib) with proven efficacy for melanoma. Drug combination requires lower dose compared to each drug when administered.

The researchers have successfully tested nanocarrier in animal models for the treatment of pancreatic, breast, and ovarian cancers and ensure maximum effectiveness, minimal toxicity, and optimal synergistic activity.

The combine drug nanocarrier can travel through the body system without damaging healthy tissues. Upon reaching the cancer cells, the nanocarrier degrades the proteins of the cathepsins enzyme. The proteins also degrade polymer and releasing the drugs, which become active and jointly to attack the tumors.

Source: news-medical.net


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