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Department of BioTechnology, Government of India

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Editorial

Who are year 2020 Padma Awardees in Biotechnology

by Dr Seema Pavgi Upadhye

Padma Awards - one of the highest civilian Awards of India, are conferred in three categories, namely, Padma Vibhushan, Padma Bhushan and Padma Shri. The Awards are given in various disciplines/ fields of activities, viz.- art, social work, public affairs, science and engineering, trade and industry, medicine, literature and education, sports, civil service, etc. 'Padma Vibhushan' is awarded for exceptional and distinguished service; 'Padma Bhushan' for distinguished service of high order and 'Padma Shri' for distinguished service in any field. The awards are announced on the occasion of Republic Day every year.

This year no Padma Vibhushan was awarded to bioscience field whereas one Padma Bhushan has been awarded and 18 Padma Shri have been recieved by people who did exceptional work in Biotechnology.

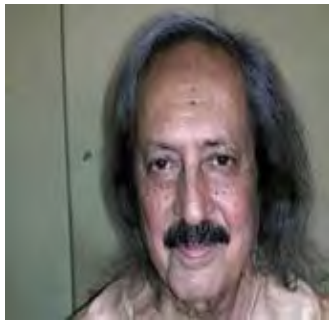
Padma Bhushan

Tsering Landol is an Indian gynecologist and one of the pioneers of women's health in Ladakh region in the North Indian state of Jammu and Kashmir. She serves the Sonam Norboo Memorial Government Hospital, Leh and is also associated with other educational institutions. The Government of India awarded her the fourth highest civilian honour of the Padma Shri, in 2006, and Padma Bhusan in 2020 for her contributions to Indian medicine, making her one of the few woman recipients of the award from Jammu and Kashmir and the first Ladkahi woman doctor to receive the honour. She is also featured on the 'Wall of Fame' which features those who have exhibited excellence throughout their career or whose existence has exemplified glory and greatness.

Padma Shri

Dr Padmavathy Bandopadhyay became the first woman Air Marshal in the Indian Air Force, taking over as Director General Medical Services (Air) at the Air Headquarters in New Delhi in 2004. Prior to this, she was lauded as the first woman Air Vice-Marshal (2002) and the first woman Air Commodore (2000) in the IAF. She is member of the Indian Society of Aerospace Medicines, International Medical Society and New York Academy of Sciences. She has also been a member of a research expedition to the Arctic. She is the first Indian woman to have conducted

scientific research at the North Pole. In the late eighties, she went to the Arctic to join an Indo-Russian physiology experiment to determine whether people from tropical Indian climates could acclimatise themselves to extreme cold conditions. She spent four months at the North Pole between November 1989 and February 1990. On her return, she was awarded Indira Priyadarshini Award for being an Outstanding Lady with so many achievements. This was the first time any Lady in uniform was honoured with this Award.



Dr Sushovan Banerjee is better known to the residents of West Bengal's Bolpur as 'Ek Takar Daktar' (one rupee doctor) for treating poor patients for just a rupee. Dr. Sushovan Banerjee is a veteran General Practitioner from Bolpur in West Bengal. He has been practicing Cardio Diabetes since 1980 from his own set up at Bolpur. During his career, Dr. Banerjee received Gold Medal in DCP and a prestigious 'Best Citizen of India' award conferred by East West Friendship Society of India. Dr Sushovan is an alumnus of Calcutta National Medical College and completed Diploma in Clinical Pathology (Haematology) in 1976 and DEP in 1989.

Prof. B N Gangadhar is a Senior Professor of Psychiatry and the current Director of NIMHANS as well as Program Director of the NICY. He was also the Medical Superintendent of NIMHANS hospital till Jan 2010. He has published over 240 scientific articles in peer-reviewed national and International journals. His research areas include ECT, RTMS & Yoga, Schizophrenia and Community Psychiatry. He heads an advanced center for Yoga therapy at NIMHANS. He has coordinated the development and design of a patented indigenous ECT machine. He has received the prestigious Sir CV Raman award in 1999 and the BC Roy award in 2010 by the Karnataka Government. He is also the Fellow of National Academy of Medical Sciences. He has guided four PHDs and nearly 20 MD dissertations. Dr Gangadhar is the associate editor of Acta Psychiatrica Scandinavica and a co-editor for the Asian Journal of Psychiatry. He has travelled widely on scientific agenda and has served on organizations like WHO.

Professor Kattungal Subramaniam Manilal is an Emeritus of the University of Calicut, a botany scholar and taxonomist, who devoted over 35 years of his life to research, translation and annotation work of the Latin botanical treatise Hortus Malabaricus. This epic effort brought to light the main contents of the book, a wealth of botanical information on Malabar that had largely remained inaccessible to English-speaking scholars, because the entire text was in the Latin language. Manilal has over 198 published research papers and 15 books to his credit as author and co-author. He and his associates have credits to discovering over 14 species of flowering plants, varieties and combinations new to science. Manilal is the Founder President of the Indian Association for Angiosperm Taxonomy (IAAT).

Editorial

Dr Sujoy Kumar Guha is an Indian biomedical engineer. He did his undergraduate degree (B.Tech.) in electrical engineering from IIT Kharagpur, followed by a master's degree in electrical engineering at IIT, and another Master's degree from the University of Illinois, Urbana-Champaign. He later received his Ph.D. in medical physiology from St. Louis University. He then founded the Centre for Biomedical Engineering, IIT Delhi and AIIMS and also obtained his MBBS degree from the University College of Medical Sciences, Delhi University. One of the founders of biomedical engineering in India, Prof. Guha is internationally known in the areas of rehabilitation engineering, bioengineering in reproductive medicine and technology for rural health care. He has received several awards and has more than 100 research papers in cited journals. In 2003 he became a chair professor at IIT Kharagpur. His major contributions have been in the invention and development of non-hormonal polymer-based injectable male contraceptive (RISUG), Problem-solving at a national level regarding contraceptives in mass usage, especially Copper T and individualized spot air-conditioning system for hospital patients and rehabilitation of the blind.

Dr Digambar Behera is Senior Professor and Head, Department of Pulmonary Medicine Post Graduate Institute, Chandigarh and Ex. Director LRS Institute of Tuberculosis and Respiratory Diseases. Dr Behera is an internationally acclaimed Respiratory Physician, teacher and researcher. He has distinguished himself with contributions of innovative nature and exceptional achievements in the field of Respiratory Medicine. In tuberculosis, Prof. Behera's contributions in the Revised National TB Program have been exemplary. He has been the Chairman of the National Task Force for involvement of Medical Colleges in tuberculosis control. Under his able leadership and persuasive abilities the program has been popularized and practiced in over 400 medical colleges and institutions in India. As the Chairman of the National Operational Research Committee for tuberculosis, he has been instrumental in taking decisions on many path breaking operational issues.

Dr Kushal Konwar Sarma has been conferred Padma Shri for his outstanding contribution in the field of wildlife treatment and Asian Elephant conservation. Dr Sarma is the professor and head of the Department of Surgery and Radiology of the College of Veterinary Science at Khanapara in Guwahati. Popularly, he is known as "Hati (Elephant) Doctor" in Assam because of his outstanding service in tranquilising and taming rogue wild elephants. Without a weekend off for last 10 years, Dr Sarma treated more than 7,000 elephants, both captive and wild. He also played the important role in taming about 200 rogue bull elephants during the last three decades. Dr Sarma is a member of the Steering Committee, Project Elephant of the Ministry of Environment, Forest and Climate Change and also a member of the IUCN Species Survival Commission on Asian Elephant Specialist Group.

Dr Leela joshi is the woman physician, who is also known as Mother Teresa of the Malwa region for her selfless service to humanity. She had completed services with railways as the Chief Medical Director in the year 1997 and since then has been fighting anaemia among tribal women and teenage girls in Ratlam district. Despite her frail body and growing age, she regularly visits tribal dominated areas and renders free of cost medical services on anaemia, pregnancy related issues and other illnesses of women. She was listed among top 100 influential women of the country in a survey carried out by Dept of Women and Child Development.

Dr. R. Ravi Kannan is Director at Cachar Cancer Hospital and Research Center Silchar, Assam, India. He was a renowned oncologist from the Adyar Cancer Institute in Chennai. Later he shifted to the Cachar Cancer Hospital and Research Centre, Silchar, Assam, where he is a surgical oncologist who is specialized in head and neck oncology and bone and soft tissue sarcoma. His vision has turned a small cancer center into a full-fledged hospital in Assam's Barak valley, a remote area on the Indo-Bangladesh border in Assam with limited access to medical care. He was running this hospital with few resources to provide better patient care to the cancer patients. The Hospital Society is also raising funds to support cancer patients including free of cost treatment including patient/family accommodation, food, and an employment center where able patients and attendants can work.

Dr. (Prof.) Narendra Nath Khanna, is Advisor to Apollo Group of Hospitals in India and is presently working as Senior Consultant in Cardiology & Coordinator of Vascular Services at Indraprastha Apollo Hospital, New Delhi. He is also appointed as Honorary Professor of Cardiology at LPS Institute of Cardiology, GSVM Medical College, Kanpur. Before joining Apollo Group of Hospitals, he worked as Sr. Consultant in Cardiology at Escorts Heart Institute & Research Centre and as Director of Escorts Heart Centre, Kanpur. He has performed more than 10,000 invasive and interventional procedures and has established interventional Cardiology services in many cities of India. He has special interest for endovascular and peripheral vascular interventions and has pioneered newer techniques for percutaneous mechanical pulmonary thrombectomy and techniques for Endovascular treatment of Aortic Aneurysms, ischemia & gangrene of the limbs, Endovenous Laser therapy and Below Knee Interventions. He has authored 26 book chapters and has about 120 publications in various national and international journals to his credit. He has been invited as a faculty and has given more than 400 guest lectures in international and national scientific meetings.

Editorial

Dr. **Navin Khanna** is presently an Arturo Falaschi Emeritus Scientist and Group Leader at Recombinant Gene Products Laboratory at ICGEB. He is also an adjunct professor at the Translational Health Sciences and Technology Institute (THSTI), Faridabad and School of Medicine at Emory University, Atlanta, USA. He is a fellow of all three Science Academies of India and his translational work has been recognized by several awards and honors. The diagnostic kits developed by Dr. Khanna are used in India and are exported to several other countries. The Dengue Day 1 kit launched in 2012 has captured more than 70% of the market share. The kit can detect Dengue infection from day 1 of the fever. Dr. Khanna has been working on genetically engineered bio-molecules of medical use at ICGEB. The "know-how" from his team has resulted in successful commercialization of 23 diagnostic kits for viral infections.

Dr. Shanti Roy is one of the best Obstetrician and gynecologists of India. She remains the last hope for women in Bihar and Jharkhand for variety of pregnancy and reproduction related problems. Her clinic has become a landmark in Patna which is flooded with hundreds of patients daily. Dr. Shanti Roy had opened her private nursing home at Kankarbagh while working in PMCH. Initially, she had to face lots of problems, and had to resort to offer for patients. However, over time, she made a mark of herself. It was her expertise in handling cases of those women who had difficulty in getting pregnant that made her famous in the Northern India.

Dr Arunoday Mondal is serving in the remote forest areas of Sunderbans, Dr Arunoday Mondal set up a free medical service centre, in 2000, and since then has been providing free treatment to the locals in the remote area. His centre "SUJAN" has steering ahead with expansion in multidirectional ushering ventures like education, social service etc. Arunoday Mondal, known as 'Sunderban ke Sujan' travels six hours every weekend to treat patients in remote Sundarban villages.

Dr Yogi Aeron is surgeon who treats burn patients for free in Dehardun. His clinic, situated close to Malsi - on the way to the popular hill station of Mussorie, is dedicated to providing medical help to the people of the hills, which also include those suffering from burns or injuries inflicted by animals. For more than a decade, he has been conducting an annual two-week camp with the assistance and participation of doctors from foreign nations. His team comprises 15-16 doctors who perform nearly 12 surgeries daily and they have executed over 5000 surgeries in the past decade.

Batakrushna Sahoo is a farmer from Sarkana village of Balasore Sahoo started pisciculture in 1986. He trained many farmers in spawn production through traditional breeding methods. He did not get any financial help from the government. He also trained students of several colleges in Odisha. Mentioning about the efforts, he explained, "The award is the result of nearly 35 years of dedication to farming. I have extended help to many farmers who have shown interest in this and have not charged any fee."

Radha Mohan, a retired economics professor and his conservationist daughter, **Sabarmatee,** have been conferred with the Padma Shri – a recognition for their decades-long efforts to transform a barren land into a lush food forest in Odisha's Nayagarh district. Founded by the duo in 1990, Sambhav, the resource centre, has become a torch-bearer in the field of conservation, agriculture and organic farming. When they landed near Odagaon, 110 km from Bhubaneswar, the land was completely barren. They started using ecological waste to create the top soil and subsequently began planting trees. As a result, 36 hectares of degraded land now boasts of rare varieties of clove bean, jack bean, black rice and sword bean apart from a number of other food trees. The forest has over 1,000 species of plants and 500 varieties of rice, and supports a seed bank with 700 indigenous varieties of seeds.

Trinity Saioo name has become synonymous with turmeric in India. Saioo, was awarded the Padmashree in 2020 for her work in developing rural women-owned sustainable organic farming. She has successfully trained around 800 women in her village of Mulieh, Meghalaya, to grow the purest and most potent form of turmeric through organic farming methods. Saioo belongs to the Jaintia hill tribe, one of the matrilineal hill tribes of Meghalaya. Saioo's Self Help Groups collective owns **two cooperatives**: the Leng Skhem Spice Producer Industrial Co-operative Society, and the Life Spice Federation of Self-Help Groups, both based in the Jaintia Hills.

Dr Sandra Desa Souza is an ENT Head, Neck and Cochlea Implant Surgeon and has an experience of 54 years in this field. She is the first Indian Fellow of the American Otological Society. She is the first woman surgeon in the world to pioneer the Cochlear implant surgery in India and Asia in 1987. Dr. Souza was one of the first ENT surgeons in the country to perform artificial ear operations, is credited to have given the gift of hearing to thousands of patients. Dr. Sandra Dsouza has received various reputed awards for her remarkable performance. Some of them are mentioned below: Recipient of Vijayshree Award in the field of ENT. Bharat Excellence Award. The Best Citizens of India Award. Millennium Achiever Award. UWA Lifetime Achievement Award. Women of the year 2002 by the American Biographical Institute. International Scientist of the year 2003. Women of the year representing in India 2011.

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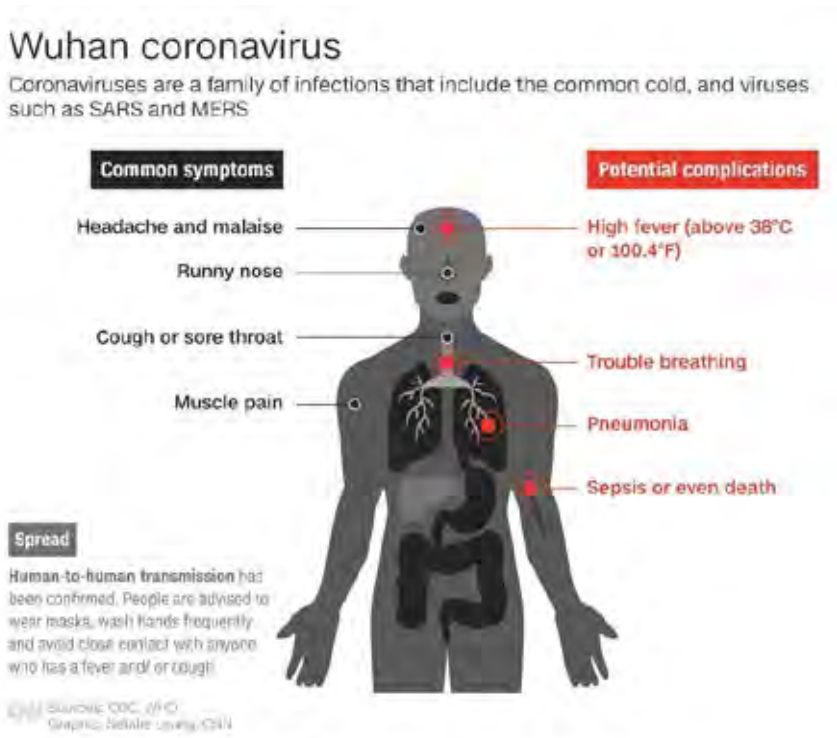
Guest Article

Novel Coronavirus: A Biological bombshell

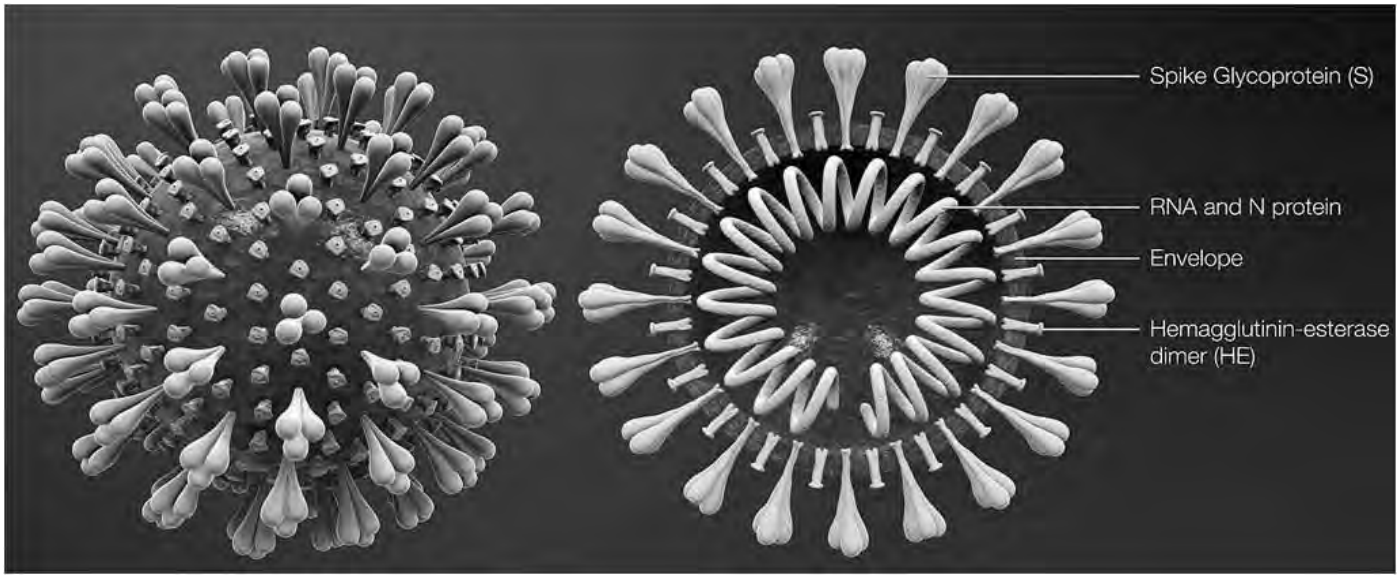
by Sonia Goel and Jasina Arora

SGT University, Gurugram, Haryana



In the verge of New Year celebrations of 2020 a news spread like biological bombshell in the medical college of China about the attack of Corona virus. It was first detected in Wuhan City, Hubei Province, China and spreading from person-to-person in different parts of that country initially. World Health Organization (WHO) declared it a global emergence threat as the virus is affecting different parts of the world. Coronavirus was first isolated in 1937 from an infectious bronchitis virus in birds that has the ability to seriously devastate poultry stocks, infect mice, rats, dogs, cats, turkey, horses, pigs, and cattle. After that in 2003 it has appeared in Humans, as Severe acute respiratory syndrome (SARS), and named as (SARS-CoV), in 2012 it was again found in Saudi Arabia and some other countries as Middle East respiratory syndrome (MERS) and named as MERS-CoV. It was discovered in 1960s with some cases of infectious bronchitis in chicken and in human patients.

The crown structure of this deadly virus gives its name as Coronavirus. It has viral spikes on the surface of its coat called peplomers which determine host specificity. It is the largest RNA virus with nucleocapsid of helical shape. Coronavirus attack the respiratory tract of mammals and cause common cold, pneumonia and gut infection. Most recently, the variety of Coronavirus detected recently in China is identified as novel Coronavirus (2019-nCoV).



The story of this deadly virus started recently when some vendors from seafood market in Wuhan, Hubei Province, China were detected with the infection of this novel virus. After that the Chinese Center for Disease Control and Prevention (China CDC) dispatched a rapid response team to the affected area to conduct an epidemiologic and etiologic investigation. The transmission of novel Coronavirus occur from person to person via respiratory droplets produced when an infected person coughs, sneezes or through animals. These infected droplets can land in the mouths or noses of people who are nearby to the affected person and can be inhaled into the lungs. CDC declared that the symptoms of 2019-nCoV may appear in as few as 2 days or as long as 14 after exposure. Initially most cases were found in people who had been in Wuhan, China, their family members and medical workers but now the spread is getting global infecting majorly all the countries of the world. The detection of the virus can be done by molecular biology lab techniques like PCR (Polymerase chain reaction). RT-PCR technique is used to diagnose the infection by collecting upper and lower respiratory specimens from infected persons.

There is currently no vaccine to prevent novel Coronavirus infection though the researchers are doing best effort to make the antidote. The available information about the genome structure of this virus is available at USA database which will surely help in developing some target vaccines for novel Coronavirus. The best way to prevent the infection of this virus is to avoid being exposed to this virus or the infected person. CDC recommended everyday preventive actions to prevent the spread of this respiratory viruses, which includes

- Washing hands with soap and water for at least 20 seconds. Use an alcohol-based hand sanitizer that contains at least 60% alcohol if soap and water are not available.
- Keep immunity strong because Coronavirus easily attack on low immunity person.
- Avoid close contact with people who are sick or infected with this virus.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.

Event Report

International Conference on Food and Industrial Biotechnology

BIOSPECTRUM 2019

November 25th and November 26th 2019

Technical Sessions

- Industrial Bioprocessing - Waste Treatment and Management
- Biomass to fuels and chemicals
- Algal Biorefinery
- Microbial and Enzyme Technology
- Biorefineries and Waste Bioremediation
- Industrial and Environmental Bioengineering
- Food Technology and Bioprocessing

Technical Session IA : Industrial bioprocesses - waste treatment and management

Chair : Sang Jun Sim and Sang Hyoun Kim from South Korea.

The first presentation was by **R.D Tyagi** from University of Quebec, Canada on microbial production, characterization and application of extracellular polymeric substances using waste water sludge. The study is based on the production of Extracellular Polymeric Substances (EPS) at high concentration with high productivity and low cost. Various types of EPS was harvested and preliminary polymer characterization in terms of proteins and polysaccharides were performed. Second presentation was by **Zhengquianq Zhang** from China on using of black soldier fly larvae to treat food waste for high value production. BSFL has the potential ability to convert food waste into valuable fertilizer efficiently, new method for organic food waste recycling and an economically feasible concept. Also BSFL can be used to produce high quality meat and eggs. It could improve the compost quality. Next presentation was by **Guangming Zhang** from China on Brewery wastewater treatment and resource recovery by photosynthetic bacteria, from indoor small scale to outdoor, pilot scale. PSB with high ability to degrade organic matter were used and the results were comparable with pure PSB systems and obtained cells demonstrated no acute toxicity to crucian carp.

The fourth presentation was by **Raj Boopathy** from Nicholls State University, USA on Bioremediation of Hazardous chemicals. The study involved the short term impact of oil spill in the sea food industry, recreational fishing and tourism. Microbes present in the water column and sediments have the potential to degrade the oil. The fifth presentation was done by **Sang-Hyoun Kim** from South Korea on current status and prospect of anaerobic digestion of Korean food waste. The anaerobic digestion has been widely adopted in the treatment of food waste and its process waste water. Anaerobic digestion can recover the chemical energy of food waste into heat, electricity and bio-methane. The presentation introduced the current state and perspectives of food waste digestion in Korea. The last presentation of the first session was by **Cheng-Di Dong** from Taiwan on spent coffee ground derived biochar as support for Ag_3PO_3 nanoparticles for the enhanced catalytic reduction of 4-nitrophenol. The study demonstrated a simple and facile synthesis method for the fabrication of biochar from spent coffee ground and applied it for the immobilization of Ag_3PO_3 nanoparticles to furnish a high efficient catalyst for the reduction of 4-nitrophenol. The mesoporous branches with remarkable adsorptive properties were successfully prepared from spent coffee ground.

Technical Session IB : Biomass to fuels and chemicals

Chair : Patrick Drogui, Canada and Vanete Soccol, Brazil.

The first presentation was taken by **Piet Lens**, IHE Delft Institute for Water Education, Netherland based on the topic "DIARY BIOREFINERY FOR FUEL AND BIOPRODUCT PRODUCTION FROM DIARY INDUSTRY WASTE STREAMS". The presentation dealt with the anaerobic digestion technology which converts complex organic waste into clean and renewable source of energy. Its application in hydrogen and methane production, low cost chemicals and production of lactic acid etc

were discussed. The presentation also provided an outline of emerging landscape of novel anaerobic digestion process. The second presentation was taken by **Dimitrios Ladakis**, Agricultural University of Athens, Greece on the topic "RISK ASSESMENT OF 2,3 – BUTANEDIOL AND METHYL ETHYL KETONE PRODUCTION VIA FERMENTATION FROM BIODIESEL INDUSTRY BYPRODUCTS AND VERY HIGH POLARITY SUGAR CANE SUGAR". The objective of the presentation was the sustainable production of bio based platform chemicals such as 2, 3 – butanediol and methyl ethyl ketone using glycerol or high polarity cane sugar as carbon source. The third presentation on the topic " BIOCONVERSION OF GIANT CANE FOR INTEGRATED PRODUCTION OF BIO HYDROGEN, CARBOXYLIC ACID AND PHAs IN A MULTISTAGE BIOREFINERY APPROACH" was presented by **Fabrizio Adani**, University of Milan, Italy. The presentation based on the plant *Arundo donax,* a C3 plant, it shows high photosynthetic rates like C4 plants. It is considered as a second generation crop for the production of sugar. The various advantages of the plant compared to other energy crops was also discussed. The fourth presentation was based on the topic " CELLULASE PRODUCTION : A MAJOR CHALLENGE IN SECOND GENERATION BIOFUEL TECHNOLOGY" was carried out by **Reeta Rani Singhania**, Center for Energy and Environmental Sustainability, Lucknow, India. Though her study it reveals that filmentous fungi *Penicillium* sp. via submerged fermentation. Some of the challenges and the future perspectives was also discussed. The fifth presentation was carried out by **Ulrika Rova**, Lulca University , Sweden, based on the topic " MICROBIAL ASSISTED PRODUCTION OF NUTRACEUTICALS FROM ORGANOSOLV PRETREATED FOREST BIOMASS". The aim of the present study was to establish a micro algal platform to produce nutraceutical value PUFAs from forest residual biomass. And also, the global demand for essential polyunsaturated fatty acids such as EPA and DHA was also discussed. The sixth presentation was based on the topic "ENZYME MEDIATED PRODUCTION OF PREBIOTIC CELLO-OLIGOSACCHARIDES FROM FOREST BIOMASS" which was carried out by **Paul Christakopolos**, Lulea University of Technology, Sweden. The non-digestible oligosaccharides are called prebiotic candidates. Through the presentation, she depicted about the prebiotic potential of cellobiose , not only as a commercial oligosaccharide, but as a novel oligosaccharide that comes from plant cell wall polysaccharides.

Technical Session IIA : Industrial Bioprocessing – Waste/Food Waste Treatment and Management

Chair: Piet Lens from Netherlands and Dimitrios Ladakis from Greece.

The presentations were based on industrial Bioprocessing – waste/food waste treatment and management. The first presentation was by **Patrick Drogui** from Canada on Bioconversion of cashew apple juice to bioplastic. PHA poly hydroxyalkanoates produced by microbes have benefits such as they are biodegradable, ecofriendly for the production of bioplastic may fermentation process were done 77% of protein were recovered from supernatant using heat and CMC treatment. And they find cashew apple as a substrate has been successfully exposed for bioplastic production. The next presentation was by **Robin C Anderson** from USA on Technologies to rescue spoiled silages and composts from contamination of select gram positive pathogenic bacteria. The initial studies provided encouraging results of using certain medium chain fatty acids and nitrocompounds as silage treatments to prevent

spoilage during air exposure. Biotechnical technologies are needed to prevent spoilage and pathogen enrichment during air exposure of silages. The next presentation was by **Irini Angelidaki** from Denmark on valorisation of waste waters and biowastes to potential animal feed. Conventional strategies for valorisation of biowaste focus mainly on the production of biogas and recovery of nutrients as compost or slurries that can be used as fertilizers. Most of the produced crops are used as protein sources for livestock consumed by humans. The study explained on the use of biogas for production of single cell proteins than using it for electricity and heat generation. The presentation approaches to convert biowaste to high value added products and proteins in the form microalgae and methane oxidizing bacteria will be presented.

Technical Session II B : Algal Biorefinery

Chairs: RD Tyagi, Canada & Zhengquiang Zhang, China

The afternoon session was taken by **Sang Jun Sim**, Korea University, South Korea. This presentation was based on topic "NOVEL SCREENING STRATEGIES FOR SELECTION OF MICROALGAL BIOMASS STRAINS WITH HIGH BIOMASS PRODUCTION PERFORMANCE". The presentation included various techniques for the selection of motile and non-motile algal strains. The second presentation was led by **Anil Kumar Patel**, Korea University, Korea. His presentation was based on the topic ''MIXOTROPHIC CULTIVATION SRATEGY; A PROMISING MICROALGAE BASED PROCESSES FOR SUSTAINABLE BIOFUEL PRODUCTION FROM WASTES". His presentation covered the recent updates and challenges on mixotropic microalgae applications for waste to wealth and environment protection. Mixotropic cultivation strategy of microalgae is gaining attention globally to economize algal process for the biomaterials and biofuels. The third presentation was carried out by **Christopher Vial**, university Clermont Auvergne, Clermont Ferrand, France. His topic was based on the topic "HARVESTING OF MICROALGAE *Chlorella vulgaris* USING CONTINUOUS ELECTRO-COAGULATION FLOCCULATION WITH POLARITY EXCHANGE". He introduced the technique called electrocoagulation for harvesting microalgae and also the ability of this method for complete microalgae recovery.

Technical Session IIIA : Microbial and Enzyme Technology

Chair : Robin C Anderson from USA and C R Soccol from Brazil

The first presentation of the third session was by **Mark R Wilkins** on production of lignin degrading enzymes by recombinant. *Aspergilus virulans* strains. In the study a maltose included recombinant, *Aspergillus niduleas* strain has been genetically modified to accumulation and secrete Aryl Alcohol Oxidize (AAO) and Legnin Peroxidase (LP). The second presentation was done by **Cristobal N. Aguilar,** Univaersidade Autonoma de Coahuila, Mexico on the topic of Analysis of a fungal ellagitannin- degrading enzyme produced by solid-state fermentation. The third presentation was done by **Jose A Teixeria** from Portugal on Development of nanostructured lipid carriers based on rhanalipids for liposoluble vitamins encapsulation. They used a novel system to encapsulate lipabilic biocomponents. The results indicate

that rhamnolipids can be a valuable alternate for the encapsulation of vitamin using nanostructued lipid carriers for use in food products. The nanostructured lipid carries was mainly influenced by genetic modification (GM). The second presentation of the session was by **Michael Sauer** on Lactic acid bacteria for Indus trial chemical production. The high stress resistance and high sugar uptake rates are quite valuable in the industries context about lactic and bacteria. High carbon uptake rate with low biomass formation combined with strictly regulate simple metabolic pathways, leading to a limited number of metabolites, are the key factors behind their success in both nature and industry. The last presentation of the first day was by **Maria-Noteli Efthymiou** from Greece on bioprocess development for the production of enzyme consortia and a generic fermentation feedstock. The sunflower meal was effectively valorized through the development of a advanced biorefinery concept for the production of proteins, phenalic compounds, crude enzyme consortia and succinic acid. Under the viewpoint of developing intergrated biorefinery concepts, the study provide a renewable feedstck for the production of fermentation products.

Technical Session IIIB : Biorefineries and Waste Bioremediation

Chair : Claude Gilles Dussap, France and Anil Kumar Patel, South Korea.

The first presentation had taken by **Sofia Mania**, Agricultural University of Athens, Greece. The topic was "SUSTANABLE VALORISATION OF SPENT COFFEE GROUNDS THROUGH AN INTEGRATED BIOREFINERY CONCEPT INCORPORATING THE PRODUCTION OF 2,3-BUTANEDIOL AND VALUE ADDED MATERIALS". She discussed about the spent coffee ground which can be used for the production of various metabolites. The third presentation were led by **Erminta Tsouko**, Agricultural University of Athens, Greece. His topic was "INTEGRATED BIOREFINERY APPROACH FOR THE VALORISATION OF ORANGE WASTE VIA THE RECOVERY OF VALUE ADDED PRODUCTS AND BACTERIAL CELLULOSE PRODUCTION". The result of the study focused on the effects for the development of an integrated biorefinery. The third presentation was handled by **Sunitha Varjani**, Gujarat pollution control Board, Gandhinagar, India. The topic was based on the "SOLID WASTE MANAGEMENT PRACTICES THROUGH BIOREMEDIATION". She explained about various laws regarding pollution control and also case studies. The last presentation was handled by **Mukesh Kumar Awasthi**, North west A and F University, China. His topic was "SUCCESSION OF KERATIN DEGRADING BACTERIA AND ASSOCIATED HEALTH RISK DURING THE PIG MANURE COMPOSTING". He also explained various diseases related to improper pig manure composting and his studies in bacteria degrading keratin.

Technical Session IVA : Industrial and Environmental Bioengineering

Chair : Zhongfang Lei from Japan and Eulogio Castro from Spain.

In this session the first presentation was by **Claude – Gilles Dussap** from University of Clermont – France on the topic CIRCULAR ENGINEERING :- A NEW CONCEPT FOR CONSIDERING SUSTAINABILITY OF BIO TRANSFORMATIONS. The study is based on sustainable development of bioprocess, and circular engineering .he concluded that in 2020 we shall have consumed the yearly capacity to regenerate raw material within only 7 months. Second presentation was by **Jose Sandoval-**

Cortes, Universidade Autonoma de Coahuila from Mexico, on the topic, PECTIN/CNT BASED ELECTRO CHEMICAL SENSOR FOR DETERMINATION OF ASCORBIC ACID, URIC ACID & DOPAMINE. He explained about dopamine, its imbalance and the carbon nanotubes and the hydrophobicity to obtain CNT dispersion in aqueous media with pectin. Third presentation is about STABLE FORMULATION OF PLANT GROWTH HORMONES FOR DIFFERENT AGRICULTURE APPLICATION by **Luciana Vandenberghe** from the Federal University of Parana, Brazil. These researches are being done in the areas of agro industry & human and animal health. They explained more about the Brazilian products and the hormones that which needed for their growth, plant hormone balance and cycles. Fourth presentation by **R Sindhu**, microbial processes and technology division CSIR- national institute for inter disciplinary science & technology Trivandrum. The study presented was on AN EFFICIENT BIOPROCESSES DEVELOPMENT FOR BIOPOLYMER PRODUCTION. She discussed about biodegradable polymers needed, natural function of bacterial polyhydroxy alkanoate, and application of cooked oil to biopolymers.

Technical Session IVB : Food Technology and Bioprocessing

Chair : Emmanuel M Papamichael and A.A Kountinas from Greece.

The first presentation was taken by **Ganti S Murthy**, Oregion State University Corvallis, USA. His presentation was based on the topic "MODEL PREDICTIVE CONTROL OF STARCH AND CELLULOSE HYDROLSIS". The presentation explained about the technique and application involved in MPC. The second presentation was taken by **Emmanuel M Papamichael**, University of Ioannina, Greece. His presentation topic was "BIOPROCESSING APPLICATION AND STRATEGIES IN ENZYME IMMOBILIZATION". His presentation focused on bioprocessing requirement and application by using immobilized enzymes, their recycling competence and appropriateness in the areas of industrial and biotechnological production of pharmaceuticals, foods, wine making, textiles, analytical and synthetic chemistry and biochemistry etc. The third presentation was taken by **A.A.Koutinas**, university of patras, Greece.His presentation was based on the topic "CELL FACTORY MODELS FOR PERFORMING THREE BOPROCESSES IN THE SAME BATCH WITHOUT GMO". The presentation deals about the fermentation poly carbohydrates in one batch. The next presentation was taken by **Chrysa Voidarou**, University of Loannina, Greece. The presentation was based on the topic "A NEW ENZYMATIC BIOCHEMISTRY METHOD TO DETECT ALP IN PASTEURIZED MILK". She explained about the various methods and concepts related ALP which is responsible for the cause of some diseases.

Technical Session VA : Industrial and Environmental Bioengineering

Chair : Michael Sauer, Austria and Irini Angelidaki, Denmark

Fifth presentation by **Eulogio Castro**, Universidad de jaen, Spain about the valorization of olive mill leaves through ultra sound existed extraction of phenolics. Sixth presentation by **Julio C Carvalho**, federal university of prana brazil. It is the production of second generation itaconic acid an alternative product to bio refinery. Seventh presentation presented by **Keikhosro Karimi**, Isfahan, university of

technology, iran. It is about municipal solid waste to biofuels:- potentials, challenges and perspectives. Municipal solid waste are the biofuels which are more expensive than fossil also known as the "dirty gold" available world widely about its functions and challenges

Technical Session IVB : Food Technology and Bioprocessing

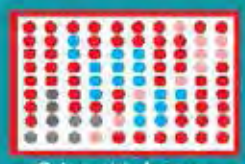
Chairs: Ulrika Rova, Sweden & Cristobal N. Aguilar, Mexico

The next presentation was handled by **K. Boura**, University of patas, Greece on "CELL FACTORY MODEL FOR STARCH BIOCONVERSION IN ONE BATCH WITHOUT GENETIC MODIFICATION". The session was handled by the chairperson, **Ulrika Rova**, Sweden and Cristobal N Aguilar, Mexico. The session based on the topic food technology and Bioprocessing presentation depicted about the development of cell rise of *saccharomyces cerevisiae* for white biotech to perform three bioprocess in the same batch at genetic modification. The next presentation was based the topic "CELL FACTORY MODEL FOR LACTOSE BIOCONVERSION BASED ON S. *cerevisiae*". The presentation was led by **Agapi Dima**, University of Patras, Patras, Greece. The presentation expressed about the S. *cerevisae.* This were used in order to ferment lactose in a single step fermentation. The next presentation was led by **Jose Lousis Martinez Hernandez**, Universidad Autonoma de Coahuila, Mexico. The topic is "POTENTIAL USE OF AGOINDUSTRIAL PRODUCTS AS SUPPORT FUNGAL JASMONIC ACID PRODUCTION UNDER SOLID STATE FERMENTATION, ALTERNATIVE SUBSTRATES". The presentation was about the solid state fermentation of the fungus Botryodi plodia theobramae for IA production. The last presentation in the topic was taken by **Carlos Ricardo Soccol,** Federal University of Parana, Curitiba, Brazil. His presentation was based on "DEVELOPMENT OF STARTER CULTURE AND THEIR IMPACTS ON THE FINAL BEVERAGE QUALITY OF BRAZILIAN COFFEE BEANS". It showed about the impact of fermentative process and the use of selected microorganism over the final quality of beans and the sensory profile of coffee beverage.

Transchymal™ Primary cell solutions
Certificate of Analysis

Name:	
Source	Human Cord Tissue Matrix
Trade Name:	Transchymal™
ID:	Transchymal-CTMSC-134/R
Cells Harvested Date	
Passage No:	
Biosafety Level	1
Organism	Homo sapiens (Human)
Growth properties:	Adherent
Age:	Lot Specific
Morphology	Spindle-Shaped, fibroblast-like
Gender	Lot Specific
Volume/Vial:	5ml (2.3 million cells / 1ml)
No: of Vials	As required
Viability	≥92%
Population Doubling Capacity:	≥ 10 in complete growth medium and support differentiation
Shipped	Frozen
Storage	Liquid nitrogen or for short term storage at -80°C
Quality Assurance:	
Testing	Tested for CD73, CD90, CD105, CD34, and CD45. Primary cells display normal karyotype as assessed by G-banding of 20 metaphase cells.
Sterility Tests	Bacteria & Yeast : Negative Mycoplasma: Negative Endotoxin: Negative

Transchymal + Test compound

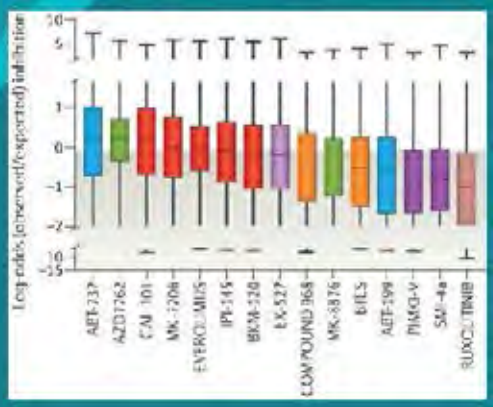


Colormetric Assays

Turbidity Measurements

Cell Marker Expression

Colony Growth & Cell Death



Transchymal Use Case

- Acute Toxicity
- Chronic Toxicity
- Repeat Dose Toxicity
- Ic50
- Carcinogenicity
- Mutagenicity
- Draize Test
- Developmental Toxicity

Plot No:70A/ B, Door No: 8293/ 82/2,
Sri Venkateshwara, Road, No:12, Banjara Hills,
MLA Colony, Hyderabad, Telangana 500034.

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Event Report

First BioMed Symposium at Tirupati - Summary Report

Biomedical Innovations and Small Business Opportunities

Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupati
Sugen Life Sciences Pvt Ltd, Tirupati
In association with
DSIR-PRISM, S.P. Mahila Visvavidyalayam, Tirupati
Federation of Asian Biotech Associations (FABA)

Date: January 22-23, 2020
Venue: SVIMS, Tirupati

The two-day symposium on "Biomedical Innovations and Small Business Opportunities" was organized on January 22-23, 2020 at SVIMS, Tirupati. A wide range of Nationally and Internationally reputed faculty members presented their views and indicated what can be the future of initiating technology transforming and incubation activities at SVIMS or Institutions at Tirupati. Four different sessions i.e., (1) Affordable Diagnostics, (2) Small Business Opportunities and Start-ups, (3) Point of Care Medical Devices and (4) Skill Development were held. The first symposium was unique in many aspects as it involved invited talks that included engineers to clinicians, and the topics touched included rural innovations, incubation centers to advanced healthcare solutions involving modern aspects such as Artificial Intelligence (AI) and the future of BioMedical Innovations.

The two-day symposium activities involved theme-based invited talks, panel discussions, a poster session for graduate students and young researchers and oral presentations for best scientific projects. Many enthusiastic Biomedical, Biopharma, Life Sciences students and researchers participated.

Welcome address:

In the welcome address **Dr C. Damodar Reddy,Ph.D.,** CEO, Sugen Life Sciences Pvt Ltd, Tirupati, (Preclinical toxicology testing of drugs) stressed the need for interdisciplinary research collaborations and the importance for concerted efforts to encourage innovative projects that can lead to small business initiatives. He spoke about the challenges that small enterprises face in small Tier-II cities like Tirupati.

Keynote Speaker Dr.S. Eswar Reddy, Joint DrugController, CDSCO, New Delhi addressing the gathering in the symposium on BioMedical Innovations and small Business opportunities organized by SVIMS andSugen Life Sciences Pvt. Ltd. Tirupati on 22-01-2020 at 09:30 AM in Sri Padmavathi Auditorium, SVIMS

Dr V. Suresh, MD,DM., Professor, Endocrinology, SVIMS who is one of the key personnel from SVIMS, dedicatedly and devotedly participated actively in organizing the symposium proposed the vote of thanks. More than 200 researchers participated in the event.

Delegates, Doctors and Staff of SVIMS who participated for the symposium on Biomedical Innovations and Small Business Opportunities organized by Sugen Life Sciences Pvt. Ltd. Tirupati in association with DSIR-PRISM, S.P. Mahila Visvavidyalayam, Tirupati and Federation of Asian Biotechnology Association (FABA), Hyderabad in SVIMS campus on 22.01.2020 (Group Photo)

Introductory remarks:

In her introductory remarks, **Dr B.Vengamma, DM.,** Director and Vice-Chancellor, SVIMS in view of the ever-emerging technologies and the way they are addressing and helping the healthcare issues and on the need for collaboration among the basic scientists and clinicians for translational research and informed that the present symposium is an effort to bring experts from cross disciplines and create a platform for interactions. She promised to organize such events in the years to come also and promote biomedical innovations.

Guest of Honor:

Prof. K.N. Ganesh,Ph.D., Director, Indian Institute of Science Education and Research (IISER), Tirupati cited several examples of success stories of recent discoveries, in the diverse fields of science and technology and how interdisciplinary initiatives are important for promoting biomedical research to address the key aspects of healthcare.

Keynote Speaker:

Dr S. Eswar Reddy, Ph.D., Joint Drugs Controller, Central Drugs Standard Control Organisation (CDSCO), New Delhi, Government of India

Title: **Recent Reforms in Indian Drug Regulations to Promote Innovation**

Dr Reddy highlighted the importance to gain the confidence of the public in the quality of drugs that are sold in India. He pointed out the need for more efforts into the development of new drugs in India and emphasized the necessity for developing drugs for rare diseases (orphan drugs). He further described the relevant laws and regulatory structure prevailing at CDSCO with regard to licensing for the manufacture and sale of drugs, deriving their legitimacy from the Drugs and Cosmetics Act 1940 and recent changes introduced in March 2019. The architecture of the regulatory mechanism in India at the central (CDSCO) and state levels was briefly touched upon. Various initiatives undertaken by the CDSCO were enumerated. This included new rules on the "central" ethics committee, ease of registration of trials, doing away with cumbersome procedures like the video recording of the consent process. He also mentioned that the IND (investigational new drug) process is on par with the FDA's of Canada, United States, Japan, and other countries. Recent initiatives taken by CDSCO to further improve the systems and processes enabling companies to apply online, obtain responses and approval process. He also encouraged the youngsters that there may be job opportunities at CDSCO and get familiar with Regulatory Affairs.

Session 1: Affordable Diagnostics

Dr Soundar Kumara, Ph.D., Institute for Computational and Data Sciences, The Pennsylvania State University, USA

Artificial Intelligence (AI) for Identifying High Priority Drug-Drug Interactions through Adverse Event Reports

Discussed major studies conducted by LISA (Laboratory of Intelligent Systems and Analytics) in healthcare, specifically on drug-to-drug interactions (DDIs), using AI and Machine Learning approaches. He talked about the machine-learning framework to extract useful features from the FDA adverse event reports, and then identify potential high-priority DDIs using an auto-encoder-based semi-supervised learning algorithm. This improves patient safety and avoids iatrogenic complications. He also showed the willingness to help and participate in SVIMS programs, if any, in the future.

Dr Usha Kalawat, MD., Microbiology, SVIMS, Tirupati

Low-cost diagnostics - The paradigm adopted by virology services at SVIMS

While laboratory results influence up to 70% of medical decisions, - medical expenditure on laboratory tests, in turn, adds to the hospital bills of the patients. Certain aspects of how samples are to be prepared and processed before sending for virology and microbiological testing were highlighted, which include automation, rationalization of staff, avoiding testing in samples that were not collected properly or deteriorated during transport or storage, rational ordering of tests by clinicians, development of in-house diagnostic kits or low-cost diagnostic algorithms (-a multiplex PCR for HPV virus was illustrated as an example).

Dr Narendra, H., M.S MCH., SVIMS & **Dr. Shibdas Banerjee**, Ph.D., IISER, Tirupati

Imaging mass spectrometry for the evaluation of tumor margins in excision biopsies from cancer patients

Prof. Narendra H, Surgical Oncologist from SVIMS spoke about the importance and the hurdles involved in maintaining a tumor-free surgical margin while performing surgery on cancer patients. They discussed the imaging mass spectrometry for the evaluation of tumor margins in excision biopsies from cancer patients and talked about the profiling of key metabolites using Desorption Electrospray Ionization Mass Spectrometric Imaging (DESI-MSI) technique for determining different cancers that include breast, prostate, and other cancers also.

His research teammate from IISER Tirupati, Dr Shibdas Banerjee, showed how establishing the metabolic map of the tissue by Imaging Mass Spectrometry can help determine whether the required tumor margin has been maintained or not. The results are available quickly, while the surgical field is still open so that further surgery can be planned to take a wider margin if the excised tumor margins are positive for tumor. In comparison, results of the frozen section may be available in a few hours, while that of conventional histology may even take a week.

Dr S K. Deshpande, Ph.D., Dept. of Scientific and Industrial Research, New Delhi

Overview of DSIR Programmes and DSIR- PRISM scheme in supporting Rural Innovations

Explained and displayed exciting videos about the activities of different PRISM centers in India, and highlighted many products developed by rural innovators and appreciated the efforts of SPMVV PRISM center. He indicated that in spite of the budgetary constraints at DSIR, they are able to support good projects, and get some products that are benefiting many rural people.

Session 2: Small Business Opportunities – Start-ups

Dr D. Yogeswara Rao, Ph.D., University of Hyderabad

The role of start-ups in Knowledge Economy: Opportunities and Challenges

Dr Yogeswara Rao, a visiting professor at the University of Hyderabad stated that Start-up companies score over established enterprises in respect of their energy and enthusiasm, and their higher risk-taking. However, start-ups need guidance and funding for which Universities must establish "Incubation Centers" for initial handholding. He illustrated various examples of successful start-ups wherein he had been involved directly in incubating them. He informed the audience about grants available from the Department of Biotechnology's BIRAC and its Biotechnology Ignition Grant (BIG). Strategies that may be adopted by start-ups to succeed are deliberated. He also visited the CFAR research facility along with Prof Reddanna and gave helpful suggestions to initiate incubation activities at SVIMS.

Eur Ing Muthu Singaram, MBA., Incubation Centre, HTIC, IIT Madras

Integrating R&D, Innovation, and Incubation in Medical Devices

Mr. Muthu Singaram from the HTIC Incubation Centre, IIT Chennai, spoke authoritatively and the most effectively engaging the audience on how research and innovation should be outcome-based. Innovation can be anything, among be introducing a very new product, an established product but in a new geographical area or a new marketing strategy for an old product. The needs of the market must be understood helping multiple companies, should attract funding from Government and private agencies. Demand for a product may already exist, if not, it may be created. Even good products could fail if; there is no demand for them. Further, he emphasized the role of incubation centers such as the one in IIT, Chennai in converting innovations into saleable products with special reference to medical devices.

Dr C. Damodar Reddy, Ph.D., Sugen Life Sciences Pvt Ltd, Tirupati

Biomedical Innovations and Small Businesses in Tier-II cities

Indicated the need for the individual economic development creating jobs for oneself and creating more jobs for others, and willing to coordinate multi-institutional efforts of leading research universities and institutes at Tirupati and to bring outside experts to promote Biopharma in Tirupati area. He highlighted his vision and commitment to bring Biotechnology and Biomedical Innovations in the Tirupati area. He spoke about the challenges that small enterprises face in small Tier-II cities like Tirupati. He offered help and guidance to young students and scholars with innovative ideas and plan to start their ventures in small towns such as Tirupati.

Poster session and oral presentations; Six awards to encourage young researchers

Dinner talk: Dr Soundar Kumara, Ph.D.

Topic: AI - Future Healthcare Solutions

Highlighted on how AI can help doctors without replacing the doctors, and data analytics, how re-hospitalizations can be well organized and managed after discharge.

Session 3: Point of Care and Medical Devices

Dr Navakanta Bhat, Ph.D., Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science, Bangalore

PathShodh: A Journey from Science to Product

Dr Navakanta Bhat spoke on the use of electrochemical sensors that use redox reactions to generate a current on a test strip that can be measured. He gave an outstanding presentation about the

Professionals/ managers need to be trained to have the ability/ skills in commercializing invention from lab to market. While countries in Asia are investing billions of dollars in R&D healthcare innovations, more jobs to be created by developing startups. These can decrease unemployment & leads to the growth of the nation.

Dr P. Reddanna, Ph.D., University of Hyderabad (UoH), Hyderabad

Innovation & Startup Ecosystem at the University of Hyderabad

Dr P. Reddanna presented various steps taken up at UoH, one of the top five universities in the country, to promote academy-industry interactions, faculty enterprises, setting up of incubation centers, establishing a section 8 company, ASPIRE (Association for Scientific Pursuits in Innovative Research Enterprises"), all under the umbrella of an academic unit, the Technology Industry Liaison and Entrepreneurship Unit (TIE-U). He gave details about the three incubation centers – Technology Business Incubation center (TBI), Technology Incubation and Development of Enterprises (TIDE) and Bio-incubators Nurturing Entrepreneurship for Scaling Technologies (BioNEST) incubation center, located within the campus for facilitating incubation of startups in the Pharma, Biopharma and Electronics and IT sectors. Of these the BioNEST incubation center was set up recently with support from BIRAC and UoH within the School of Life Sciences, one of the largest in the country with 65 faculty members, 350 PhD scholars and another 300 + Masters students working in divergent areas of biology, which is currently housing more than 20 startups. He further explained the locational advantages for the BioNEST incubation center, in terms of availability of technical experts, human resources and high-end infrastructure in genomics, proteomics, metabolomics, imaging facilities, etc. He further stated the plans for the University for setting an "Integrated Healthcare Research Park" to support growth phase centers in the years to come. Further details on the supporting ecosystem provided by TIE-U and ASPIRE to promote innovation and entrepreneurship activities among the students, scholars, and faculty at the UoH were presented.

Dr P.B. Seshagiri, Ph.D., Indian Institute of Science, Bangalore

Title: Opportunities in Health Care R & D Sector

Dr P.B. Seshagiri talked about how one can move from bench to the bedside i.e., from basic research in biology to benefit health care. He gave an example of how an understanding of the steps in embryogenesis and implantation could improve the outcomes of fertility treatment through stem cell therapy. Our country has to establish an enabling ecosystem, which includes small-medium scale business entrepreneurship to large-scale

manufacturing of pharmaceuticals and opportunities in biologics/biosimilars related to treating reproductive health problems.

Wrap-up event:

Coordination: **Prof. PB. Seshagiri (Poster Awards), Dr Vengamma, Dr Damodar Reddy**

Following the completion of the lectures, a valedictory function was organized, presided over by the Director cum Vice-Chancellor of SVIMS- Prof. B Vengamma. She expressed her passion for more work to be done on Translational research & working together with other diverse sectors like engineers, scientists and indicated that more medical graduates could have participated. Presenters of the best three posters and oral presentations each received a cash prize sponsored by FABA and other agencies and certificates from her. With the completion of the valedictory function, the two-day symposium was successfully concluded.

Best Oral Presentations

1. **S. Subbarayudu.** Title "**Acetate Kinase a potential drug target in the development of antimicrobials against *Staphylococcus aureus* infections**". Microbial Genetics Laboratory, Department of Biotechnology, Sri Venkateswara Institute of Medical Sciences, Tirupati.
2. **Chiranjeevi Tikka.** Title "**Arsenic Exposure Altered the Gut Microbiome and NOD2 of Ileum through Immune Disruption and regulated Inflammation in Mice: Correlation with Colon Cancer Markers"**. Department of Zoology, SVU College of Science, Sri Venkateswara University, Tirupati-517502, Andhra Pradesh, India.
3. **Murali Krishna Thupurani.** Title **"Antimicrobial activity of Strychnos nux-vomica leaf and root extracts against human pathogens"**. Department of Biotechnology Chaitanya Institute of Science and Technology, CIST (Deemed to be University), Warangal-506001 Telangana, India.

Best Poster Presentations

1. **V.V. Ramesh Chandra.** Title "**Gooseneck flexible brain retractor – utility of gooseneck tubing in neurosurgery** (poster No.55); Department of Neurosurgery, SVIMS University, Tirupati-517507
2. **Vankadoth Umakanth Naik.** Title "**Targeting Raf-MEK-ERK by novel lead through *in silico* approaches** (poster No.31); Bioinformatics Centre, Department of Bioinformatics, SVIMS University, Tirupati-517507
3. **P.Venkata Likhitha.** Title "**Probing binding interaction of bovine serum albumin (BSA) with bixin and crocin through spectroscopy studies and thermodynamic properties**" (poster No.56)".Sri Padmavathi Mahila Viswavidhyalayam (Women's University) Tirupati-517501

Presentation Awards and Best Poster Presentation Awards for the Doctors and Students who participated in the symposium on Biomedical Innovations held in SVIMS University on 22nd & 23rd, January 2020

All the researchers were overwhelmed and inspired by the talks of the speakers. Following the talks, they have got a good idea and understood the vision and scope of biomedical research and about the help that may be available for establishing startups by getting funds from PRISM, BIRAC and other similar agencies. They thanked the organizers for conducting such an exciting symposium & urged them to conduct this type of innovative symposiums annually in the future.

Future plans indicated:

Dr Vengamma, Director and Vice-Chancellor, SVIMS expressed her views in starting an incubation center at SVIMS, Tirupati. Research on several frontiers may be initiated, and help to build the technology transforming incubation center and clinical issues can be investigated by more laboratory investigations and generation of support data for the clinical problem, and feasibilities.

Dr Damodar Reddy expressed his views on establishing startups, and perseverance to get success. He suggested that the researchers should enhance one's research-oriented knowledge, and improve the skills early on in their scientific careers.

Recommendations:

- SVIMS is a good place to start an incubation center in Tirupati and funding can be acquired from DBT-BIRAC and DBT.
- Several faculty members recommended taking this symposium to an actionable thing by collaborating with the institutions/ companies.
- Youngsters also urged organizers to conduct this type of scientific activities regularly, as they can have discussions with the wonderful speakers about the ongoing translational research.

Press Release

International Summit on Women in STEM–"Visualizing the Future: New Skylines"

The Department of Biotechnology, Ministry of Science & Technology, Government of India organized - International Summit on Women in STEM–"Visualizing the Future: New Skylines" on 23rd and 24th January 2020 at India Habitat Centre, New Delhi. The Summit was organized with the overall aim to boost the participation of women in STEM field for development of scientific career.

This summit was inaugurated at the India Habitat Centre, New Delhi and concluded on 24th January 2020. Different sessions of the summit included mechanisms of leadership building, empowering women through networking, career opportunities and interactive exercises with scientists. The aim was to showcase women in STEM successes as real-world examples of successful women scientists, doctors and engineers demonstrating the excitement of being in the STEM fields as well as the rewards associated with it. Discussions and interactive sessions between aspiring young, mid-career and senior scientists in the STEM field were held to understanding the future requirements of women's employment and career progression. Keynote speakers were renowned women scientists in STEM from different countries, young as well as established women scientists, science communicators and entrepreneurs from India.

Around 350 participants from different STEM field across the globe participated in the event including scientists, socialists, entrepreneurs, researchers, teachers and students. Posters were presented by women scientists and students.

The summit actually provided a good platform for young students and researchers to interact and network with leaders in the field, to develop ideas and generate a future action plan for making career in STEM fields.

Workshop on Molecular Neurobiology: From Genes, Neurons to behavior in health and disease

February 24-29, 2020 at Regional Centre for Biotechnology, Faridabad

Workshop on Molecular Neurobiology will explicitly focus on the current progress of Neuroscience and Neurobiology on health and disease issues covering various model organisms. Leading neurobiologists from India will discuss their recent emerging findings with thier immediate clinical or translational relevance. There will be a further exchange of talks between students and experts on career in neuroscience and opportunity for in-depth interaction during the lab hours.

Speakers:

Sanjay Sane (NCBS, Bangalore)
Krishanu Ray (TIFR, Mumbai)
Sandhya Koushika (TIFR, Mumbai)
James Clement (JNCASR, Bangalore)
Girish Ratnaparkhi (IISER, Pune)
Anindya Ghosh Roy (NBRC, Gurgaon)
Sourav Banerjee (NBRC, Gurgaon)
Deepak Nair (IISc, Bangalore)
Aurnab Ghose (IISER, Pune)
Kavita Babu (IISc, Bangalore)

Nitin Gupta (IIT, Kanpur)
Jonaki Sen (IIT, Kanpur)
Surajit Sarkar (DU, Delhi)
Collins Assisi (IISER, Pune)
Pankaj Seth (NBRC, Gurgaon)
Suhel Parvez (JHU, Delhi)
Nixon Abraham (IISER, Pune)
Amitabha Majumdar (NCCS, Pune)
Pushkar Sharma (NII, Delhi)
Gaurav Das (NCCS, Pune)

Guest seminar: Prof. Teiichi Tanimura
(Nagoya University, Japan)

Organizer :
Dr. Pinky Kain Sharma (RCB)

Patrons :
Executive Director (RCB)
Registrar (RCB)

Email: wmn2020@rcb.res.in

To apply visit: www.rcb.res.in

Registration deadline:
January 30, 2020

United Nations
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क्षेत्रीय जैव प्रौद्योगिकी केन्द्र
Regional Centre
for Biotechnology

NEWS: Govt. & Industry

New digital reagent dispensers released by Thermo Fisher Scientific

29 January, 2020
Source: Newlands Press Ltd

Thermo Fisher Scientific (MA, USA), have announced two new high precision digital reagent dispensers. The precise dispensing capability of the new dispensers could minimize expensive reagent loss, reduce the need for re-runs and help to increase laboratory throughput.

The new digital reagent dispensers could be useful for scientists working across drug metabolism and pharmacokinetics, bioanalytical, pre-clinical and clinical trial applications. Designed to dispense reagent volumes between 11 picoliters to 200 microliters in any well, the digital dispensers could minimize the potential for human error and repetitive strain injuries.

Compared to manual pipetting workflows, a broad array of low-volume applications, including qPCR, dose-response curves, drug screening assays, serial dilutions and ELISAs could be enhanced. The new digital reagent dispensers make use of disposable, non-contactable dispensing heads which eliminate carry over and could help to protect sample integrity.

Sung Dae Hong, vice president and general manager for laboratory plastics essentials (Thermo Fisher Scientific) explained: "Manual pipetting poses a number of important challenges, from result variability and bias to time and cost inefficiencies and ergonomic stresses. The new high precision Multidrop Pico 1 and Pico 8 Digital Dispensers are capable of easily and quickly delivering high quality results, while minimizing reagent usage and waste."

Agilent Introduces New Cutting-Edge SureSelect DNA Kit

27 January 2020
Source: Agilent Technologies Inc.

SANTA CLARA, Calif.--(BUSINESS WIRE)-- Agilent Technologies Inc. (NYSE: A) today introduced a new product designed to address key challenges that laboratories encounter when preparing DNA sequencing libraries for their research. The new Agilent SureSelect XT HS2 DNA Kit represents the state-of-the-art in library preparation and target enrichment, offering researchers a complete solution that allows them to choose workflow options that best suit their needs.

Advantages of the new kit include:
The ability to multiplex hundreds of samples in one sequencing run, which reduces sequencing costs for high-throughput labs.
The ability to remove sample contamination as a result of index hopping from reads.
Better error correction to detect variants with low allele frequencies (particularly important in cancer applications where the samples are often of varying tumor purity).
The option to purchase Solid Phase Reversible Immobilization (SPRI) beads and streptavidin beads as part of a complete kit.

"The release of SureSelect XT HS2 demonstrates Agilent's decade long commitment to innovation of our SureSelect brand to ensure that customers have access to the most comprehensive and cutting-edge solutions for NGS library preparation," said Lou Welebob, vice president of Commercial Marketing, Diagnostics and Genomics Group at Agilent. "We continue to evolve in order to satisfy our customer's unmet needs for cancer and constitutional applications."

About Agilent Technologies
Agilent Technologies Inc. (NYSE: A) is a global leader in life sciences, diagnostics and applied chemical markets. Now in its 20th year as an independent company delivering insight and innovation toward improving the quality of life, Agilent instruments, software, services, solutions, and people provide trusted answers to customers' most challenging questions. The company generated revenue of $5.16 billion in fiscal 2019 and employs 16,300 people worldwide.

Aimmune Wins FDA Approval for First Peanut Allergy Treatment

Feb 03, 2020
Source: https://www.fool.com/

The U.S. Food and Drug Administration (FDA) approved Aimmune Therapeutics' oral immunotherapy AR101, which will be sold under the brand name Palforzia.

Palforzia was approved under Fast Track Review for use in pediatric patients, ages 4 to 17, who have been diagnosed with an allergy to peanuts, which can be deadly due to potential anaphylaxis. The approval marks a first for those battling peanut allergies. Prior to its full approval, Palforzia was overwhelmingly supported by the Allergenic Products Advisory Committee, which reviewed the data. The committee sup-

ported approval of the drug by a vote of 7-2 in support of efficacy and 8-1 for safety.

Palforzia [Peanut (Arachis hypogaea) Allergen Powder-dnfp] is an oral treatment indicated to mitigate allergic reactions to peanuts. As an oral immunotherapy, the specific allergenic proteins are ingested initially in very small quantities, followed by incrementally increasing amounts, resulting in the ability to mitigate allergic reactions to the allergen over time. The medication is intended for use with a diet that recommends the avoidance of peanuts. It is not approved for the emergency treatment of allergic reactions, including anaphylaxis, which means patients with a confirmed peanut allergy may still need their emergency treatments, such as the Epi-Pen Auto injector.

Phase III data showed Aimmune's peanut allergy therapy was effective in more than 67 percent of juvenile patients. Aimmune said 67.2% of juveniles ages four to 17 who were administered AR101 in the Palisade trial could tolerate exposure of at least a 600-mg dose of peanut protein in the exit food challenge. Only 4 percent of patients on the placebo could tolerate that amount, the company said when the data was announced. It was that data that supported Aimmune's Biologics License Application. The FDA is set to make a decision on Palforzia in early 2020. In June 2015, Aimmune won Breakthrough Therapy Designation status from the U.S. Food and Drug Administration (FDA) for Palforzia.

List of 10 Prominent African American Life Science Leaders by Biospace

Feb 03, 2020
Source: BioSpace.com

African Americans make up a disproportionately low percentage of leadership positions in the industry, as demonstrated by several recent studies, including a 2017 study by MassBio. A 2017 study by Nature Biotechnology found that African Americans made up 13% of the population but held only 3% of executive positions at biotech firms.

There are probably numerous reasons for this, but it's certainly not for lack of talent. Here's a look at 10 African American life science leaders.

Kenneth Frazier, Chief Executive Officer, Merck & Co.
One of the most prominent African Americans in biopharma, Frazier earned his Bachelor of Arts degree from Penn State and JD from Harvard University. He joined the law firm Drinker Biddle & Reath, then joined Merck in 1992 as general counsel of the public affairs division. In 2006, Frazier became executive vice president while still general counsel, and led the human health group beginning in 2017, becoming president in 2010. He took on the role of chief executive officer in 2011, the first African American to lead a major pharmaceutical company.

Irving W. McConnell, Founder and Chief Executive Officer, The McConnell Group
Irving McConnell founded The McConnell Group in 1996 as a health sciences company. The McConnell Group still focuses on biomedical research and biodefense research support services. It has also expanded into related practice areas. Irving McConnell graduated from Tuskegee University with a BS in Animal Science and eventually his DVM in 1974. McConnell served in the U.S. Army where he served in the Veterinary Corps and the U.S. Army Special Operations Command for over 27 years. He also was awarded the Bronze Star and the Order of Military Medical Merit.

Judith Gwathmey, Chief Executive Officer/Chief Scientific Officer, Gwathmey, Inc.
Judith Gwathmey received her BA in biology from the University of Pennsylvania, her VMD (Doctor of Veterinary Medicine) from the University of Pennsylvania, and her PhD in Physiology and Pharmacology from The Ohio State University. She participated in a post-doctoral research fellowship at Harvard Medical School and the Beth Israel Hospital Department

of Medicine. She is also a Professor of medicine and Professor of Physiology at Boston University School of Medicine. She founded Gwathmey Preclinical Services (Gwathmey Inc) in 1996.

Susan Windham-Bannister, Chief Executive Officer, Biomedical Growth Strategies

From 2008 to 2016, Windham-Banniser served as founding president and chief executive officer of the $1 billion Massachusetts Life Sciences Initiative. Her role was to develop, implement and lead the strategy for the investment initiative. Biomedical Growth Strategies is a boutique strategy advisory firm serving the life sciences industry. She received a BA from Wellesley College, a PhD in Health Policy and Management from the Florence Heller School at Brandeis University, and a Doctor of Science from Worcester Polytechnic Institute. She was a post-doctoral fellow at Harvard University's John F. Kennedy School and as a Fellow in the Center for Science and Policy (CSAP) at Cambridge University, England.

Mae C. Jemison, Astronaut

In September 1992, Mae Jemison became the first African American woman in space, flying aboard the space shuttle Endeavour. She was a mission specialist, acting as a co-investigator on two bone cell research experiments. She left NASA in March 1993, went on to teach at Dartmouth College, and founded the Jemison Group, whose focus was on encouraging a love of science in students and to bring advanced technology to schools around the globe. She also took over leadership of the 100-Year Starship program founded by the Defense Advanced Research Projects Agency (DARPA), which has the goal of human space travel beyond the solar system within the next century. She earned her BS in Chemical Engineering and BA in African and African American studies from Stanford University. She earned her MD from Cornell University in 1981.

Frank Clyburn, Executive Vice President, Chief Commercial Officer, Merck & Co.

Frank Clyburn received his BA from Franklin & Marshall College and his MBA from Arizona State. Before joining Merck, he was vice president of Oncology and Internal Medicine at Sanofi Aventis and served in a wide range of commercial roles at Sanofi and other previous companies. Before joining Merck's Executive Committee, he was president of Merck's Global Oncology business. He was also previously president of the Primary Care Women's Health Business Line & Market Access. He joined Merck in 2008.

Cynthia M. Patton, Chief Compliance Officer, Amgen

Cynthia Patton received her BA from Vassar College and JD from George Washington University. As chief compliance officer, she is responsible for Amgen's worldwide compliance and business ethics organization. She joined Amgen in 2005. Before joining Amgen, she spent seven years as general counsel for SCAN Health Plan, a California HMO. Prior to SCAN, she was assistant general counsel of UniHealth. She began her legal career at Atlanta-based Alston & Bird in 1986.

Marie A. Bernard, Deputy Director, National Institute on Aging

Maria Bernard is the Deputy Director of the National Institute on Aging (NIA) at the National Institutes of Health (NIH). She received her undergraduate education at Bryn Mawr College and her MD from the University of Pennsylvania. She trained in internal medicine at Temple University Hospital in Philadelphia, Pennsylvania, where she also acted as chief resident. Until 2008 she was the endowed professor and founding chairman of the Donald W. Reynolds Department of Geriatric Medicine at the University of Oklahoma College of Medicine and Associate Chief of Staff for Geriatrics and Extended Care at the Oklahoma City Veterans Affairs Medical Center.

Gary H. Gibbons, Director, National Heart, Lung, and Blood Institute

Gary Gibbons is the director of the National Heart, Lung, and Blood Institute (NHLBI) at the NIH, the third largest institute at the NIH with an annual budget of more than $3 billion and a staff of 917. Gibbons earned his undergraduate degree from Princeton University and graduated magna cum laude from Harvard Medical School. He completed his residency and cardiology fellowship at Brigham and Women's Hospital. He was a faculty at Stanford University from

1990-1996 and at Harvard Medical School from 1996-1999. Before joining the NHLBI, Gibbons served as the founding director of the Cardiovascular Research Institute, the chairperson of the Department of Physiology, and professor of physiology and medicine at the Morehouse School of Medicine in Atlanta.

Cherie Butts, Medical Director, Biogen

Cherie Butts is medical director and Head, Human Biology Research—Digital & Quantitative Medicine at Biogen. Her overall activities involve incorporating digital technologies into clinical trials. Butts received her undergraduate and graduate degrees from The Johns Hopkins University. Her pre-doctoral studies at the University of Texas MD Anderson Cancer Center focused on anti-tumor immune responses in ovarian cancer patients. Her postdoctoral studies at the NIH studied neuroendocrine regulation of innate immunity. She continued this work at the U.S. Food and Drug Administration. She moved into program management at Biogen, at first in immunology and later heading preclinical programs across all therapeutic areas, including hematology, immunology, fibrosis, and neurology. She then transitioned to portfolio management. She joined Biogen in 2012.

China's Wuhan Institute Files to Patent the Use of Gilead's Remdesivir for Coronavirus

Feb 05, 2020
Source: https://www.thepharmaletter.com/

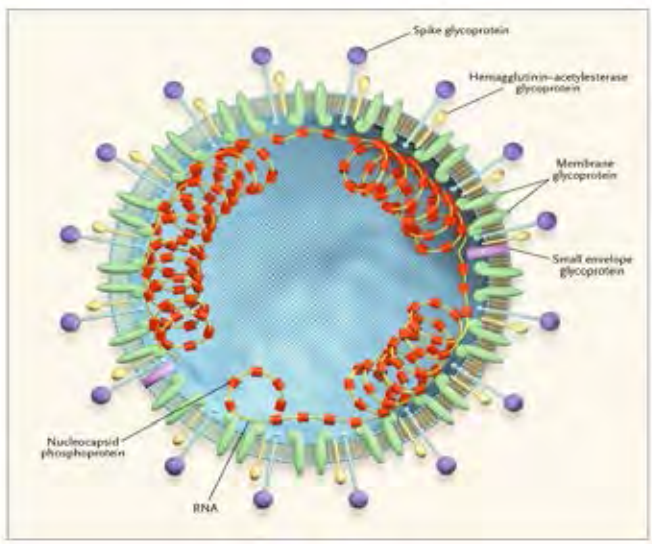
The Wuhan Institute of Virology, part of the China Academy of Sciences, has applied to patent the use of Gilead Sciences' remdesivir to treat the current coronavirus outbreak.

The company has partnered with Chinese health authorities to run a Phase III clinical trial to assess remdesivir for treatment of the virus. The drug was originally developed to treat the Ebola virus, but wasn't effective. Preclinical assays have suggested that the drug might be effective against the coronavirus, 2019-nCoV, as was published in the New England Journal of Medicine (NEJM). The drug was given to a U.S. patient for compassionate use on day seven of the disease and their condition improved on day eight.

The new clinical trial will be conducted at Friendship Hospital in Beijing, China. The trial will enroll 270 patients with mild and moderate pneumonia caused by the virus. "Gilead is working closely with global health authorities to respond to the novel coronavirus (2019-nCoV) outbreak through the appropriate experimental use of our investigational compound remdesivir. While there are no antiviral data for remdesivir that show activity against 2019-nCoV at this time, available data in other coronaviruses give us hope," the company stated.

The World Health Organization (WHO), however, is trying to downplay media reports of any drug breakthroughs against the outbreak, stating there are "no known" drugs against the virus. "There are no known effective therapeutics against this 2019-nCoV and WHO recommends enrollment into a randomized controlled trial to test efficacy and safety," the organization stated today. "A master global clinical trial protocol for research and prioritization of therapeutics is ongoing at the WHO."

To date, the coronavirus has infected almost 25,000 and killed almost 500.



Dr Reddy's acquires Wockhardt's India business for Rs 1,850 cr

February 14, 2020
Source: Elets Technomedia Pvt Ltd

Dr Reddy's Laboratories (DRL) has entered into an agreement with Wockhardt to acquire a majority of Wockhardt's domestic formulations business for Rs 1,850 crore.

With this buyout, DRL is set to become the 11th largest pharmaceutical company in the Rs 14 lakh crore India market, up from 14.

As per the acquisition deal, a portfolio of 62 brands in multiple therapy areas such as respiratory, neurology, VMS, dermatology, gastroenterology, pain and vaccines would be transferred to DRL along with manufacturing facilities in Baddi, Himachal Pradesh.

Responding to the development, G V Prasad, co-chairman and managing director of DRL, was quoted as saying, "India is an important market for us, and this acquisition will help in considerably scaling-up our domestic business. The acquired portfolio shall enhance DRL's presence in the high growth therapy areas with market leading brands such as Practin, Zedex, Bro-zedex, Tryptomer and Biovac. We believe the portfolio holds a lot of potential and will get an impetus under DRL."

"The intended sale of business portfolio is in line with the company's strategic plan to shift from acute therapeutic areas to more chronic business like anti-diabetes, CNS (central nervous system) etc. and also to its niche antibiotic portfolio of new chemical entities," Wockhardt chairman Habil Khorakiwala said.

Eurofins announces acquisition of all assets of Gomti Life Sciences

February 6, 2020
Source: BusinessWire India

Eurofins, through Eurofins Advinus, acquires all assets of Gomti Life Sciences Private Limited through a business transfer agreement.

The assets include a fully equipped state-of-the-art manufacturing facility located in Bidadi Industrial Area, Bengaluru, India, with cGMP pilot plant, intermediate area and ISO class eight clean rooms and a total reactor capacity of about 45 KL.

With this acquisition, Eurofins Advinus will be able to manufacture RSMs, intermediates, APIs and NCEs. The company can now support drug substance requirements from multi-kilogram to MT scale for Toxicology studies, clinical trials and launch quantities.

"This acquisition could be a game-changer for Eurofins Advinus as it enables the group to enter clinical development and commercial supply part of the Pharma R & D value chain through cGMP API supplies of NCEs. This addition is also a part of a larger foray of the Eurofins group into CDMO / CRAMS market," commented Rajiv Malik, MD of Eurofins Advinus Limited.

Genentech, Lilly Fail to Meet Primary Endpoint in Alzheimer's Trial

Feb 10, 2020 By Mark Terry
BioSpace.com
Alzheimer's disease continues to be a tough nut to crack. A specially designed clinical trial that was the first disease prevention trial to study Alzheimer's disease drugs with different mechanisms of action from two different pharmaceutical companies failed to hit the primary endpoint. DIAN-TU-001 is a Phase II/III trial that tested two therapies compared to placebo, Genentech and Roche's gantenerumab and Eli Lilly and Company's solanezumab. The overall trial was founded in 2010 and funded by Eli Lilly and Company, Roche and Genentech, the National Institutes of Health, and other donors.

First, Genentech, a Roche company, announced that the gantenerumab arm of the Phase II/III DIAN-TU-001 trial did not meet the primary endpoint in an early-onset, inherited form of Alzheimer's. This form of Alzheimer's is known as autosomal dominant AD (ADAD) and makes up less than 1% of cases.

GIOSTAR Launches Stem Cell / Cancer Research and Therapy Center in Chandigarh, India

Feb. 5, 2020 /PRNewswire/

Global Institute of Stem Cell Therapy and Research (GIOSTAR), a leading provider of regenerative medicine, is proud to announce the inauguration of a new stem cell / cancer research and therapy center in Chandigarh, India. This facility represents the latest milestone in global expansion efforts spearheaded by GIOSTAR in India, Mexico, the United States, and numerous other countries.

GIOSTAR Chandigarh occupies 4 stories and 12,000 square feet, with a sleek, modern design that "reflects the cutting edge, elite science that GIOSTAR has been delivering for over two decades," according to GIOSTAR Co-Founder and CEO Deven Patel. Following the recent opening of a center in New Delhi, it is the most recent in a series of hospitals being launched throughout the country. Future plans for expansion include Kolkata and Bangalore.

Additional highlights of GIOSTAR's worldwide efforts include:
Launch of a stem cell therapy center in Cancun Rivera, Mexico, regarded as one of the world's premier tourist destinations
Collaboration with large pharmaceutical company in China to launch clinical trials for cerebral palsy for children
Conditional approval for Type 2 Diabetes clinical trial in Bahamas, where nearly 15% of the population suffers from the disease
In-depth discussions between delegations of Ahmedabad, India and Kobe, Japan, to foster additional investment opportunities between the two "sister cities"
Process of FDA approval for clinical trials for Type 2 Diabetes and other disorders in the United States

GSK Sets Plan to Split the Company into Two Separate Entities

Feb 05, 2020
Source: https://www.medicalbuyer.co.in/

GSK announced its broad-stroke plans Wednesday morning as it reported its 2019 earnings report, which fell short of analyst expectations due to pricing pressure in the respiratory drug market. GSK expects 2020 adjusted profit to be down 1% to 4%.

The new companies will include GSK, an R&D-fo-

cused company that will have a keen interest in programs related to the immune system, use of genetics, as well as new technologies, and the consumer healthcare business. GSK said it intends to use the two-year separation period will provide the company with time to "drive a common approach to R&D across modalities with improved capital allocation," as well as "align and improve capabilities and efficiencies of global support functions to support New GSK." Other aims that will be accomplished for the R&D side of the new GSK will allow the company to optimize its supply chain and portfolio and divest assets that are not considered core to its mission. The company said it will conduct a strategic review of its prescription dermatology products as it moves forward, a sign that this is one area the company will begin to shed assets.

The two-year plan is estimated to have costs of about £2.4 billion, or about $3.1 billion. More than half of those costs will be paid for with available cash, the company said. The proceeds gained from future divestitures are expected to cover the remaining costs, the company noted. The break-up is expected to deliver improved operating performance, with meaningful improvements from 2022, GSK said.

FDA Approval for First Thyroid Eye Disease Treatment

Jan 22, 2020
Source: https://www.fda.gov/

Ireland's Horizon Therapeutics became the first to win regulatory approval in the United States for the treatment of Thyroid Eye Diseases, a progressive autoimmune disorder that can threaten the vision of those afflicted.

Tuesday afternoon the U.S. Food and Drug Administration (FDA) approved Tepezza (teprotumumab-trbw) as the first treatment for this condition. The regulatory agency approved the medication weeks ahead of its March 8, PDUFA date. It was approved under Priority Review and had received Orphan Drug, Fast Track and Breakthrough Therapy designations from the FDA.

Tepezza is a fully human monoclonal antibody (mAb) and a targeted inhibitor of the insulin-like growth factor-1 receptor (IGF-1R) that is administered to patients once every three weeks for a total of eight infusions. The approval was based on strong clinical data that showed improvements in patients as early as six weeks, as well as continued improvement across the entire 24-week course of treatment. In a Phase III study, patients treated with Tepezza saw an 82.9% improvement in proptosis (eye bulging) compared to placebo, which demonstrated a 9.5% improvement. Also, the drug posted a 67.9% improvement from baseline in diplopia (double vision) compared to 28.6% of patients receiving placebo. The company said an analysis of both Phase II and Phase III data showed more patients with complete resolution of diplopia among those treated with Tepezza compared with placebo, 53% to 25%, respectively.

Insys Founder Sentenced to 66 Months for Scheme to Boost Opioid Sales

Jan 24, 2020 By Alex Keown
Source: https://in.reuters.com/

John Kapoor, the founder and former chief executive officer of Insys Therapeutics, has been sentenced to more than five years in federal prison for the role his company played in the opioid epidemic. Kapoor is the highest-ranking pharmaceutical executive to be held liable for the increasing opioid crisis.

Kapoor was found guilty in May 2019 of orchestrating kickback schemes to encourage doctors to boost prescriptions of Subsys, a powerful pain killer. For his role in that plan, Kapoor was sentenced to 66 months

in prison Thursday afternoon. Prosecutors had hoped Kapoor, 76, would receive about 15 years in prison but Kapoor's defense team had requested only one year in prison due to Kapoor's advanced age. When U.S. District Judge Allison Burroughs announced the sentencing, she said she arrived at the 66 months sentence due to Kapoor's advanced age and philanthropy, as well as "his central role in the crime," NPR reported, citing The Associated Press.

During the sentencing, several patients spoke about the suffering they went through after being prescribed high doses of Subsys from the doctors who were paid by Insys, the AP said. Some of the patients said the drug made their teeth fall out and also left them with memory loss. There were also stories of becoming addicted to opioids due to the doctors pushing the drug on them. One woman, Deborah Fuller, told the court about her daughter who died of an overdose at the age of 32.

Merck KGaA invest €250M into a new clinical manufacturing site in Switzerland

January 27, 2020
Source: Endpoints

As Merck KGaA strives to prove itself as a capable biopharma R&D player, it has begun construction on a €250 million facility dedicated to developing and manufacturing drugs for use in clinical trials.

The German drugmaker chose a location at Corsier-sur-Vevey, Switzerland, where it already has a commercial manufacturing site, in order to "bridge together research and manufacturing."

"This investment in the Merck Biotech Development Center reflects our commitment to speed up the availability of new medicines for patients in need, and confirms the importance of Switzerland as our prime hub for the manufacturing of biotech medicines," CEO Stefan Oschmann said at the groundbreaking ceremony, according to a statement. Their goal is to have the 15,700 square meters (nearly 169,000 square feet) site fully operational by 2022. Around 250 currently spread across different sites will be brought to the new facility.

Newly Discovered Alzheimer's Gene Hints at Possible Breakthrough for the Disease

Published: Jan 23, 2020 By Mark Terry
Source: BioSpace.com

Investigators at the Case Western Reserve University School of Medicine identified a previously unknown gene and the resultant protein that may potentially slow the progress of Alzheimer's disease. The team has named the protein aggregatin and they believe that if the gene or protein could be suppressed, it could possibly slow the development of the disease.

"Based on the data we have, this protein can be an unrecognized new risk factor for Alzheimer's disease (AD)," said Xinglong Wang, associate professor of pathology at Case Western. "We also see this as a potential novel therapeutic target for this devastating disease."

The newly identified gene is FAM222A, which the researchers associated with imaging genetics to AD-related regional brain atrophy. The protein, aggregatin, that the gene codes for is mostly expressed in the central nervous system and is increased in the brains of AD patients as well as in an AD mouse model.

Aggregatin accumulates inside amyloid deposits, and with the way it physically interacts with beta-amyloid, helps the accumulation of beta-amyloid.

"This protein characteristically accumulates, or aggregates, within the center of plaque in AD patients, like the yolk of an egg—which is part of the reason we named it 'aggregatin,'" Wang said.

WHO endorses 'made in India' test for TB

January 16
Source: TheWeekLive

A diagnostic test for tuberculosis developed in India has been included in the WHO Global TB Programme. TrueNat, a new molecular test that diagnoses TB and tests for resistance to the drug Rifampicin in about 90 minutes, has been endorsed by the WHO owing to its "high diagnostic accuracy".

The test has been developed by Goa-based Molbio Diagnostics that received technical assistance and resources by Geneva-based Foundation for Innovative New Diagnostics (FIND) to help commercialise it. The TrueNat kit is "highly cost effective" as compared to the American GeneXpert. It can be used in peripheral centers without an AC lab and runs on solar powered battery, according to the Indian Council of Medical Research.

"Endorsement of the TrueNat by the WHO would enable other low and middle income countries to procure TrueNat for TB and Rifampicin resistance and support TB elimination programme in developing countries," said Dr Balram Bhargava, Secretary DHR and DG ICMR.

The department of health research and the department of biotechnology picked the TrueNat kit after reviewing several indigenous technologies developed by Indian scientists and companies for detection of MDR/XDR TB. The review process was conducted at four national laboratories in the country, where scientists compared the new test to current diagnostics for tuberculosis.

"After a stringent review, series of validation, feasibility studies and continuous follow-up, the 'TrueNat M.TB & Rif' assay was found to be at par with the internationally recognized molecular assay Gene Xpert in terms of sensitivity, specificity and detection of Rifampicin resistance. It was also taken up by National TB Elimination Programme after recommendation by the ICMR," the ICMR said in a statement.

The ICMR also funded the Indian centres of the FIND-coordinated multi-central, prospective field evaluation study in four countries (India, Ethiopia, Peru, Papua-New Guinea) for the new TB test.

It is on the basis of the data obtained from this study that the WHO included TrueNat in its list as a test to diagnose TB (replacing sputum smear microscopy) and to sequentially detect Rifampicin resistance in view of its high diagnostic accuracy. The final analysis of the data collected from this study would be done soon by FIND in Geneva.

RESEARCH NEWS

Coin-sized smart insulin patch as potential diabetes treatment

The adhesive patch monitors blood sugar, or glucose. It has doses of insulin pre-loaded in very tiny microneedles, less than one-millimeter in length that deliver medicine quickly when the blood sugar levels reach a certain threshold. When blood sugar returns to normal, the patch's insulin delivery also slows down. The researchers said the advantage is that it can help prevent overdosing of insulin, which can lead to hypoglycemia, seizures, coma or even death.

The microneedles used in the patch are made with a glucose-sensing polymer that's encapsulated with insulin. Once applied on the skin, the microneedles penetrate under the skin and can sense blood sugar levels. If glucose levels go up, the polymer is triggered to release the insulin. Each microneedle is smaller than a regular needle used to draw blood and do not reach as deeply, so the patch is less painful than a pin prick. Each microneedle penetrates about a half millimeter below the skin, which is sufficient to deliver insulin into the body.

In the experiments, one quarter-sized patch successfully controlled glucose levels in pigs with type I diabetes for about 20 hours. The pigs weighed about 55 pounds on average.

Journal Reference:

Jicheng Yu, Jinqiang Wang, Yuqi Zhang, Guojun Chen, Weiwei Mao, Yanqi Ye, Anna R. Kahkoska, John B. Buse, Robert Langer, Zhen Gu. Glucose-responsive insulin patch for the regulation of blood glucose in mice and minipigs. Nature Biomedical Engineering, 2020; DOI: 10.1038/s41551-019-0508-y

First robust cell culture model for the hepatitis E virus

In previous studies, the research team analysed virus populations resulting from genetic mutations of the virus in patients and identified a specific genetic change that leads to a significantly higher proliferation of the pathogen. The scientists inserted this mutation into the previously used cell lines and were thus able to increase the production of new virus particles by a factor of five to ten.

In their current article, they optimised the cell culture conditions by adding special culture media and using different liver cell lines. These measures resulted in approximately 100 times more infectious virus particles than previously published.

In order to verify whether the new cell culture model can be used to study the virus, the researchers carried out several experiments. For example, they tested whether enveloped and naked viruses are produced in the same way. "Both variants of the virus occur in HEV patients," explains study author Martina Friesland from the Experimental Virology at Twincore Centre for Experimental and Clinical Infection Research in Hanover. "However, they are responsible

for different routes of infection. While the enveloped virus is transmitted by blood-blood contact, such as transfusions, the naked virus is excreted via the stool and causes infection for example through contaminated drinking water." Both variants can now be studied with the new cell culture model.

In a previous study, the authors had shown that the mutation leads to increased proliferation in all hepatitis E viruses, and that this is also the case in various liver cell lines used in the research. In the current study, they optimised the model once again. "To this end, we have used insights gained in the clinic to improve a preclinical in-vitro model," elaborates Daniel Todt. The effect of increased proliferation is also evident in healthy human liver cells, as well as in the animal model. Here, virus particles could be detected in the blood and faeces of rodents for more than a month. "In previous models, detection was only ever possible in faeces, because the number of virus particles produced was too low," points out Daniel Todt. "Now, we can produce infectious viruses in almost unlimited quantities for research purposes and do not have to resort to virus isolates from patients."

Journal Reference:

Daniel Todt, Martina Friesland, Nora Moeller, Dimas Praditya, Volker Kinast, Yannick Brüggemann, Leonard Knegendorf, Thomas Burkard, Joerg Steinmann, Rani Burm, Lieven Verhoye, Avista Wahid, Toni Luise Meister, Michael Engelmann, Vanessa M. Pfankuche, Christina Puff, Florian W. R. Vondran, Wolfgang Baumgärtner, Philip Meuleman, Patrick Behrendt, Eike Steinmann. Robust hepatitis E virus infection and transcriptional response in human hepatocytes. Proceedings of the National Academy of Sciences, 2020; 201912307 DOI: 10.1073/pnas.1912307117

Gene ID'd as potential therapeutic target for dementia in Parkinson's

In new research, scientists at Washington University School of Medicine in St. Louis have found a clue to the link between Parkinson's, APOE and dementia. They discovered that harmful Parkinson's proteins spread more rapidly through the brains of mice that have the high-risk variant of APOE, and that memory and thinking skills deteriorate faster in people with Parkinson's who carry the variant. The findings, published in Science Translational Medicine, could lead to therapies targeting APOE to slow or prevent cognitive decline in people with Parkinson's.

The researchers found that APOE4 mice had more alpha-synuclein clusters than APOE3 or APOE2 mice. Further experiments showed that the clumps spread more widely in APOE4 mice as well. Together, the findings showed that APOE4 was directly involved in exacerbating signs of disease in the mice's brains.

To study the effect of APOE variants on dementia in people with Parkinson's, the researchers analyzed publicly available data from three separate sets of people with Parkinson's. Two of the cohorts -- one from the Parkinson's Progression Markers Initiative, with 251 patients, and the other from the Washington University Movement Disorders Center, with 170 patients -- had been followed for several years. In both cohorts, cognitive skills declined faster in people with APOE4 than in those with APOE3. People with two copies of APOE2 are very rare, but none of the three patients in the group with two copies of APOE2 showed any cognitive decline over the period of the study.

The third cohort, from the NeuroGenetics Research Consortium, was made up of 1,030 people with Parkinson's whose cognitive skills had been evaluated just once. The researchers found that people with APOE4 in the cohort had developed cognitive problems at a younger age and had more severe cognitive deficits at the time they were evaluated than people with APOE3 or APOE2.

Journal Reference:

Albert A. Davis, Casey E. Inman, Zachary M. Wargel, Umber Dube, Brittany M. Freeberg, Alexander Galluppi, Jessica N. Haines, Dhruva D. Dhavale, Rebecca Miller, Fahim A. Choudhury, Patrick M. Sullivan, Carlos Cruchaga, Joel S. Perlmutter, Jason D. Ulrich,

Bruno A. Benitez, Paul T. Kotzbauer, David M. Holtzman. APOE genotype regulates pathology and disease progression in synucleinopathy. Science Translational Medicine, 2020; 12 (529): eaay3069 DOI: 10.1126/scitranslmed.aay3069

Living near major roads linked to risk of dementia, Parkinson's, Alzheimer's and MS

Researchers from the University of British Columbia analyzed data for 678,000 adults in Metro Vancouver. They found that living less than 50 metres from a major road or less than 150 metres from a highway is associated with a higher risk of developing dementia, Parkinson's, Alzheimer's and MS -- likely due to increased exposure to air pollution.

"For the first time, we have confirmed a link between air pollution and traffic proximity with a higher risk of dementia, Parkinson's, Alzheimer's and MS at the population level," says Weiran Yuchi, the study's lead author and a PhD candidate in the UBC school of population and public health. "The good news is that green spaces appear to have some protective effects in reducing the risk of developing one or more of these disorders. More research is needed, but our findings do suggest that urban planning efforts to increase accessibility to green spaces and to reduce motor vehicle traffic would be beneficial for neurological health."

For the study, researchers analyzed data for 678,000 adults between the ages of 45 and 84 who lived in Metro Vancouver from 1994 to 1998 and during a follow-up period from 1999 to 2003. They estimated individual exposures to road proximity, air pollution, noise and greenness at each person's residence using postal code data. During the follow-up period, the researchers identified 13,170 cases of non-Alzheimer's dementia, 4,201 cases of Parkinson's disease, 1,277 cases of Alzheimer's disease and 658 cases of MS.

For non-Alzheimer's dementia and Parkinson's disease specifically, living near major roads or a highway was associated with 14 per cent and seven per cent increased risk of both conditions, respectively. Due to relatively low numbers of Alzheimer's and MS cases in Metro Vancouver compared to non-Alzheimer's dementia and Parkinson's disease, the researchers did not identify associations between air pollution and increased risk of these two disorders. However, they are now analyzing Canada-wide data and are hopeful the larger dataset will provide more information on the effects of air pollution on Alzheimer's disease and MS.

When the researchers accounted for green space, they found the effect of air pollution on the neurological disorders was mitigated. The researchers suggest that this protective effect could be due to several factors.

"For people who are exposed to a higher level of green space, they are more likely to be physically active and may also have more social interactions," said Michael Brauer, the study's senior author and professor in the UBC school of population and public health. "There may even be benefits from just the visual aspects of vegetation."

Journal Reference:

Weiran Yuchi, Hind Sbihi, Hugh Davies, Lillian Tamburic, Michael Brauer. Road proximity, air pollution, noise, green space and neurologic disease incidence: a population-based cohort study. Environmental Health, 2020; 19 (1) DOI: 10.1186/s12940-020-0565-4

New clues into the genetic origins of schizophrenia

The study was carried out in the Xhosa population because Africa is the birthplace of all humans, yet ancestral African populations have rarely been the focus of genetics research. (There is no evidence that the Xhosa have an unusually high risk of schizophrenia). The researchers analyzed blood samples collected

from 909 individuals diagnosed with schizophrenia and 917 controls living in South Africa. Their study revealed that participants with schizophrenia are significantly more likely to carry rare, damaging genetic mutations compared to participants without schizophrenia. These rare mutations were also more likely to affect brain and synaptic function. Synapses coordinate the communication between brain nerve cells called neurons; the organization and firing of neuronal synapses are ultimately responsible for learning, memory, and brain function.

Journal Reference:

S. Gulsuner, D. J. Stein, E. S. Susser, G. Sibeko, A. Pretorius, T. Walsh, L. Majara, M. M. Mndini, S. G. Mqulwana, O. A. Ntola, S. Casadei, L. L. Ngqengelele, V. Korchina, C. van der Merwe, M. Malan, K. M. Fader, M. Feng, E. Willoughby, D. Muzny, A. Baldinger, H. F. Andrews, R. C. Gur, R. A. Gibbs, Z. Zingela, M. Nagdee, R. S. Ramesar, M.-C. King, J. M. McClellan. Genetics of schizophrenia in the South African Xhosa. Science, 2020; 367 (6477): 569 DOI: 10.1126/science.aay8833

New gene correction therapy for Duchenne muscular dystrophy

An interdisciplinary Munich research team led by scientists from TUM has for the first time succeeded in correcting the mutated dystrophin gene in living pigs. In order to cut the defective gene sequence from the DNA of the animals' muscle and heart cells, the researchers modified the Crispr-Cas9 gene scissors. "These gene scissors are highly efficient and specifically corrected the dystrophin gene," says Prof. Wolfgang Wurst, developmental geneticist at TUM and the German Research Center for Environmental Health. It became then again possible to viably read the gene which had been unreadable because of the genetic defect, thus allowing for a successful protein biosynthesis. Now the shorter but stably formed dystrophin protein was able to improve muscle function. The animals treated were less susceptible to cardiac arrhythmia and had an increased life expectancy compared to animals with the disease that did not receive the therapy.

Journal Reference:

A. Moretti, L. Fonteyne, F. Giesert, P. Hoppmann, A. B. Meier, T. Bozoglu, A. Baehr, C. M. Schneider, D. Sinnecker, K. Klett, T. Fröhlich, F. Abdel Rahman, T. Haufe, S. Sun, V. Jurisch, B. Kessler, R. Hinkel, R. Dirschinger, E. Martens, C. Jilek, A. Graf, S. Krebs, G. Santamaria, M. Kurome, V. Zakhartchenko, B. Campbell, K. Voelse, A. Wolf, T. Ziegler, S. Reichert, S. Lee, F. Flenkenthaler, T. Dorn, I. Jeremias, H. Blum, A. Dendorfer, A. Schnieke, S. Krause, M. C. Walter, N. Klymiuk, K. L. Laugwitz, E. Wolf, W. Wurst, C. Kupatt. Somatic gene editing ameliorates skeletal and cardiac muscle failure in pig and human models of Duchenne muscular dystrophy. Nature Medicine, 2020; DOI: 10.1038/s41591-019-0738-2

New 'universal' target for antiviral treatment

Now, researchers at Massachusetts General Hospital (MGH) have uncovered a novel potential antiviral drug target that could lead to treatments protecting against a host of infectious diseases -- creating a pan, or universal, treatment. Their work suggests that the protein Argonaute 4 (AGO4) is an "Achilles heel" for viruses. AGO4 is one of a family of AGO proteins. Until now, there has been little evidence of why they are important. The researchers, led by Kate L. Jeffrey, PhD, and her collaborators found that AGO4 plays a key role protecting cells against viral infections.

Specifically, this protein is uniquely antiviral in mammalian immune cells. The group studied the anti-viral effects of several Argonaute proteins, and found that only cells that were deficient in AGO4 were "hyper-susceptible" to viral infection. In other words, low levels of AGO4 make mammalian cells more likely to become infected.

The MGH researchers suggest that boosting levels of AGO4 could shore up the immune system to protect against multiple viruses. "The goal is to understand how our immune system works so we can create treatments that work against a range of viruses, rather than just vaccines against a particular one," says Jeffrey.

Mammals have four Argonaute proteins (1-4), which act by silencing genes and which are remarkably conserved throughout multiple living things, including plants. These are RNAi and microRNA effector proteins and RNAi is the major antiviral defense strategy in plants and invertebrates. Studies of influenza infected mice have shown that AGO4-deficient animals have significantly higher levels of the virus.

Journal Reference:
Fatemeh Adiliaghdam, Megha Basavappa, Tahnee L. Saunders, Dewi Harjanto, John T. Prior, D. Alexander Cronkite, Nina Papavasiliou, Kate L. Jeffrey. A Requirement for Argonaute 4 in Mammalian Antiviral Defense. Cell Reports, 2020; 30 (6): 1690 DOI: 10.1016/j.celrep.2020.01.021

Repairing tooth decay with a bioactive peptide

Now, researchers in ACS Applied Materials & Interfaces report a bioactive peptide that coats tooth surfaces, helping prevent new cavities and heal existing ones in lab experiments.

The researchers based their anti-cavity coating on a natural antimicrobial peptide called H5. Produced by human salivary glands, H5 can adsorb onto tooth enamel and destroy a broad range of bacteria and fungi. To promote remineralization, the team added a phosphoserine group to one end of H5, which they thought could help attract more calcium ions to repair the enamel than natural H5. They tested the modified peptide on slices of human molars. Compared with natural H5, the new peptide adsorbed more strongly to the tooth surface, killed more bacteria and inhibited their adhesion, and protected teeth from demineralization. Surprisingly, however, both peptides promoted remineralization to a similar degree. After brushing, people could someday apply the modified peptide to their teeth as a varnish or gel to protect against tooth decay, the researchers say.

Journal Reference:
Li Zhou, Hai Ming Wong, Yu Yuan Zhang, Quan Li Li. Constructing an Antibiofouling and Mineralizing Bioactive Tooth Surface to Protect against Decay and Promote Self-Healing. ACS Applied Materials & Interfaces, 2019; 12 (2): 3021 DOI: 10.1021/acsami.9b19745

Scientists Engineer Mosquitoes to Repel Dengue Virus

An international team of scientists led by Associate Professor Omar Akbari's Lab at the University of California San Diego (UC San Diego) has engineered mosquitoes that stop the transmission of the Dengue virus. The UC San Diego Lab worked with colleagues at Vanderbilt University Medical Center in identifying a broad spectrum human antibody for Dengue suppression. The development marks the first engineered approach in mosquitoes that targets the four known types of Dengue, improving upon previous designs that addressed single strains.

The research team then designed the antibody "cargo" to be synthetically expressed in female Aedes aegypti mosquitoes, which spread the Dengue virus. Akbari said that once a female mosquito takes in blood, the antibody is activated and expressed. "The antibody is able to hinder the replication of the virus and prevent its dissemination throughout the mosquito, which then prevents its transmission to humans," he added.

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Exploring opportunities through the amalgamation of Technology and Healthcare

MEDTECH
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Building further capabilities and reinforcing global leadership in the Generics industry

INNOVATIVE TECHNOLOGIES
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- Academic Research Institutions
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- Policy Makers/Regulatory Experts

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XVII Convention of BRSI:

International Conference on Biotechnology for Sustainable Agriculture, Environment and Health

(BAEH-2020)

November 8-11, 2020 Jaipur

Details: http://brsi2020jaipur.in/

The event will be jointly organized by the MNIT, Jaipur; CDC India, Jaipur, BISR, Jaipur and NIT-Uttarakhand in association with the International Solid Waste Association (ISWA), The Institute of Chartered Waste Managers (ICWM) and B Lal Institute of Biotechnology, Jaipur. This will be supported by the International Bioprocessing Association, France; Centre for Energy and Environmental Sustainability (CEES)-India and Amity University, Jaipur. The event will be held at BISR, Jaipur. Prof TP Singh, Prof AB Gupta and Dr Vivek Agarwal are conference chairs. Dr V Vivekanand is the convener of BAEH-2020 and Dr P Binod, COE, BRSI; Dr Krishna Mohan, BISR, Jaipur and Dr B Lal, BIB, Jaipur, Dr Rakesh Kumar Mishra, NIT-Uttarakhand are its co-conveners. Details can be found at http://brsi2020jaipur.in/

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NOTICES

Nominations are Invited for Shanti Swarup Bhatnagar Prize for Science and Technology 2020

The Council of Scientific and Industrial Research (CSIR) invites nominations for the Shanti Swarup Bhatnagar (SSB) Prizes in Science and Technology for the year 2020. The SSB Prizes are to be given for research contributions made primarily in India during the past five years. The age of the nominee for the SSB Prize 2020 should not be more than 45 years as on 31 December 2019.

The SSB Prizes are awarded for notable and outstanding research, applied or fundamental, in the following disciplines: (1) Biological Sciences, (2) Chemical Sciences, (3) Earth–Atmosphere–Ocean– Planetary Sciences, (4) Engineering Sciences, (5) Mathematical Sciences, (6) Medical Sciences and (7) Physical Sciences.

The SSB Prize carries a cash award, a citation and a plaque for each scientist selected for the award. Nominations addressed to The Scientist Incharge – SSB YSA Unit, Human Resource Development Group, CSIR Complex, Library Avenue, Pusa, New Delhi 110 012 should be sent as per the prescribed proforma along with reprints of significant publications of the last 5 years period on or before 31 March 2020. PDF version of duly filled proforma, significant publications and photograph of the proposed nominee are also required in USB/Pen drive.

The details of the SSB Prize and the prescribed proforma for nomination may be obtained from the above address or may also be downloaded from the website: www.csirhrdg.res.in

Call for 2020 applications is now open!

Apply to be a Young Investigator

Applications to the EMBO Young Investigator Programme are accepted annually in a two-stage process and must be submitted through an online system

Application process

- The deadline for pre-applications is 1 April 2020, 14:00 CEST.
- The Young Investigator Committee invites selected candidates to submit a full application and attend an interview.
- The deadline for full applications is 2 July 2020, 14:00 CEST.
- All invited candidates will be interviewed by the Young Investigator Committee on 5 or 6 November 2020.
- The final decision will be made at the Young Investigator Committee meeting.
- All applicants will be informed of the outcome of their application by email.

Required documentation

The complete application for the Young Investigator Programme consists of:

- CV
- Synopsis of recent work
- Outline of the research programme
- Short summary of research
- Publication list and list of three best papers
- Three letters of reference
- List of grants and pending grant applications
- ORCID

*Applicants must have published at least one last author research paper in an international peer reviewed journal from independent work carried out in their own laboratory. EMBO will consider papers published on preprint servers (arXiv, BioRxiv, PeerJ., etc), but a last author publication in an international peer reviewed journal is still a requirement. Your last author paper should have "accepted" status by the time of the interview (05 or 06 November 2020).

Do NOT indicate the journal impact factor. EMBO is a signatory of the San Francisco Declaration on Research Assessment (DORA), which recommends “not to use journal based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist’s contributions, or in hiring, promotion, or funding decisions”.
For detailed information on the application process, key dates and required documentation, please consult the application guidelines (pdf).

***For detail information please visit following link:**
https://www.embo.org/funding-awards/young-investigators/apply#application

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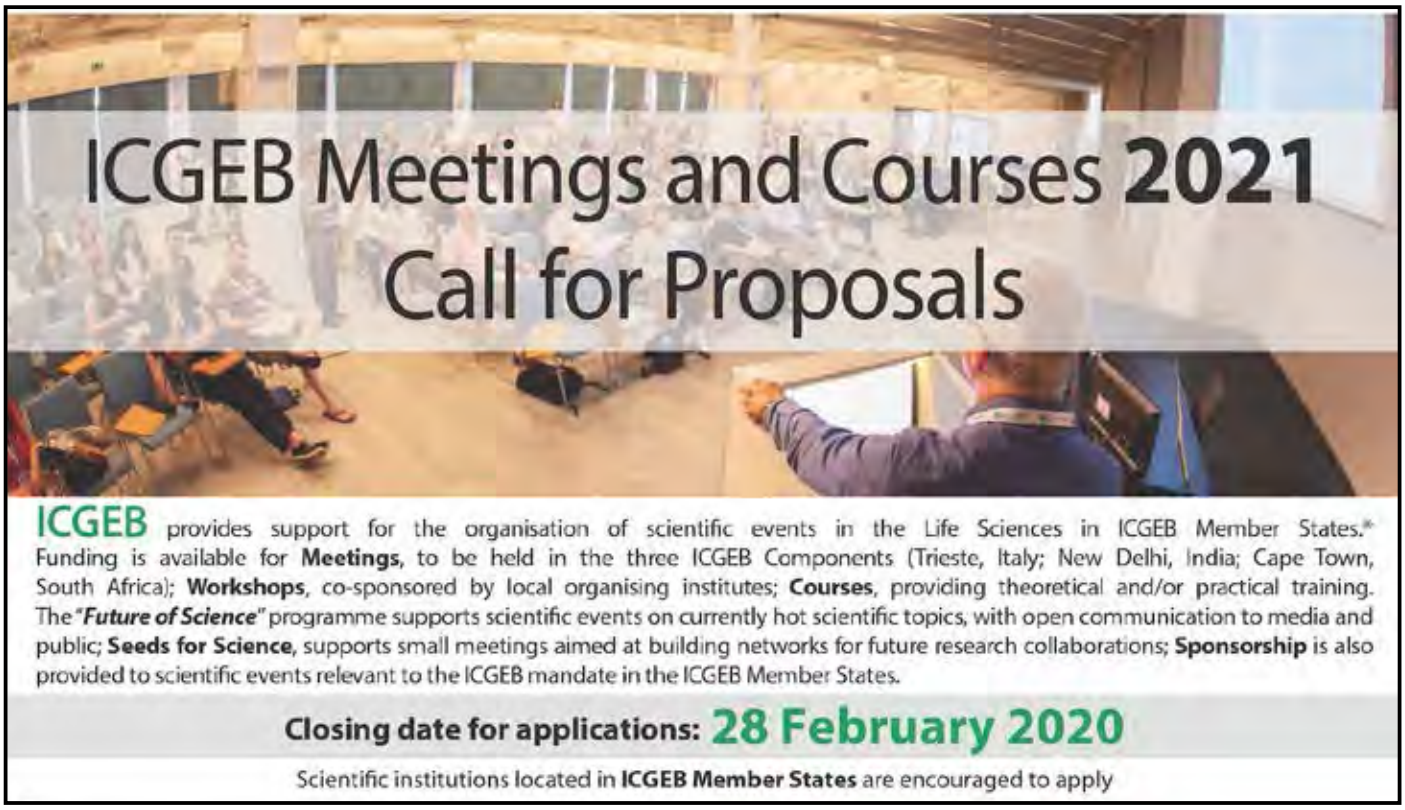

IITM Summer Fellowship Programme - 2020

The IITM - Summer Fellowship Programme of two months with stipend is designed to enhance awareness and interest in high quality academic research among young Engineering, Management, Sciences and Humanities students through a goal oriented summer mini-project undertaken at the Indian Institute of Technology Madras.

Eligibility:Candidates pursuing 3rd year of B.E./B.Tech./B.Sc. (Engg) or 3rd or 4th year of Integrated M.E./M.Tech. programme, 1st year of ME/M.Tech/M.Sc./M.A, MBA with outstanding academic background in terms of high ranks in university examinations are encouraged to apply, highlighting their academic performance and achievement including papers presented at seminars, projects executed, design contests participated, score/rank in Mathematics Olympiad and any other awards/distinctions obtained. [IIT students are not eligible to apply].
Period of the Project: Duration of the programme may commence from 20th May 2020 to 19th July 2020. (Schedule may be flexible to suit student's convenience.)
Stipend: A sum of Rs.6000/- per month will be given as a stipend for a maximum period of 2 months.

Bonafide :Letter from the Institute: Should certify that you are a bonafide student issued by the Head of Institution (download template of UG/DD bonafide and PG Bonafide
Site will be activated on 12-01-2020

The Last date for Online Submission : 29-02-2020 at 5.00 pm.

DEPARTMENT OF BIOTECHNOLOGY

Ministry of Science & Technology

DBT ANNOUNCES Third Call under ATGC PROGRAM

DBT Invites Proposals under Accelerated Translational Grant for Commercialization (ATGC) Program to Translate Research Leads beyond Early Stage Validation and Encourage Academia to Develop Product/Process/Application

- To Support Proposals aiming for Late Stage Validation
- To Accelerate Translation of Laboratory Research beyond Early Stage Validation
- To Bridge the Innovation Gap through Partnerships and to Provide Support System

Scheme Consists of Two Components:

Academic Lead Translation (ALT)	Academia-Industry Translational Research (AITR)
Academia Independently or in Collaboration with Other Academic Partner (s) or Industry in a Contract Research Mode.	Academia by Involving Industry as Collaborator

Who can Apply?

Academia is required to be the main applicant. Collaborations between Academia-Academia are encouraged for **ALT** and Academia-Industry are required to be applicants for **AITR**.

Industry alone or as a Primary Applicant is not eligible.

How to Apply?

Proposals are required to be submitted **online only.** Only those proposals that are submitted as per the ATGC Proposal format will be considered**.** For program details, required Technology Readiness Levels (TRLs) and submission of proposals, PIs are required to visit DBT website at (www.dbtindia.nic.in/atgc).

For Queries, Please Contact:	Last Date for Submission of Proposals:
Dr. Sundeep Sarin, Adv. DBT at sundeep@dbt.nic.in Dr. Sandhya R. Shenoy, Director, DBT, Medical Biotechnology Division at sandhya.shenoy@dbt.nic.in	**29.02.2020**

Call Details for RFA on Drug Development

India is a leader in global generic pharmaceuticals manufacturing. However, many generics manufactured in India are at the end of their respective product life cycle, with limited new research and development taking place on new drugs. Furthermore, our country has a high burden of both communicable and non-communicable diseases and is vulnerable to epidemics. In order to keep pace with global innovation and to improve health outcomes, there is a need to foster R&D for new and cost-effective therapies. With the aim to take India at global map in terms of R&D innovations in the area of drug development in our country, the Department has initiated a **new program on "Drug Development"** with a vision to develop indigenous and cost-effective new drugs against the following diseases:

I. Communicable Diseases

- Tuberculosis

II. Non-Communicable Diseases

- Cardio-Vascular Diseases (CVD),
- Chronic Obstructive Pulmonary Diseases (COPD) and
- Cancer (oral, head and neck, cervical and breast cancer)

The **Department of Biotechnology (DBT)** in collaboration with its Public Sector Undertaking, **Biotechnology Industry Research Assistance Council (BIRAC)** invites proposals in the area of "**Development of Drugs from existing leads with established proof of concept**".

Mode of Selection:

Proposals received will be screened and short-listed by an expert committee constituted by the Department. The short-listed proposals would be further considered for funding as per DBT norms.

Mode of Submission:

Proposals may be submitted online in the DBT R&D format through DBT- eProMIS (http://dbtepromis.nic.in/Login.aspx) under Category of Area-'**Drug Development**', clearly stating '**Proposal against Call for Proposal**'. Subsequently, two hard copies should also be sent to: Dr. Vinita N. Chaudhary, Scientist 'E', Department of Biotechnology, Block- 2, Room No.705, 7thfloor, CGO Complex, Lodhi Road, New Delhi – 110003.

For any queries please contact:
Dr. Vinita Chaudhary, Joint Director, DBT:**vinita.chaudhary@nic.in**
Dr. Aparna Sharma, Manager-Technical, BIRAC **tech01.birac@nic.in**

Timeline:

Call for Proposal opens: 01.01.2020

Call for Proposal closes: 29.02.2020

Department of Biotechnology, Ministry of Science & Technology
Government of India

BIOTECHNOLOGY INDUSTRY RESEARCH ASSISTANCE COUNCIL

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Invites proposals for Vaccine Candidates & Translational Research Consortia

VACCINE CANDIDATES

Proposals are invited for
Clinical development of Novel/New/Next Generation Vaccine Candidates for infections with high disease burden in India or having outbreak potential.
Preclinical studies for proposed candidates should be completed by March 2020.

Call Opens: 31st January 2020
Submission Deadline: 28th February 2020 (5:00 PM)

FOCUS OF THE CALLS

TRANSLATIONAL RESEARCH CONSORTIUM (TRC)

Proposals are invited for
Establishing Translational Research Consortium:
To accelerate development of novel vaccines, collaborative proposals are invited to establish multi-disciplinary Translational Research Consortium for any one of the following pathogens:

• Hepatitis E Virus • Respiratory Syncytial Virus • *Plasmodium* species

The collaborators should demonstrate complimentary and synergistic research strengths.

Call Opens: 31st January 2020
Submission Deadline: 13th March 2020 (5:00 PM)

For queries please contact Mission Director, PMU-NBM: **technical@birac.nic.in**
Program Manager, PMU-NBM: **nbm2@birac.nic.in** For specific RFP details, please log on to **http: //www.birac.nic.in/nbm**

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