HIGHLIGHTS

⇒ DBT launches Distinguished Biotechnology Research Professorship scheme

⇒ New medicine for Hepatitis C treatment launched

⇒ Plant-based drug can fight resistant TB

⇒ Centre to control BT cotton seed prices by fixing MRP

⇒ CSIR-CCMB scientists prove scientific basis for ancient ayurvedic medicine through genome analysis
IN THE NEWS

- India unveils new guidelines for clinical research involving children
- Katoch committee on API asks govt to initiate measures for stronger industry-academia interaction
- Scientifically validated Rs 5 anti-diabetes herbal drug launched by CSIR
- DBT launches distinguished biotechnology research professorship scheme
- India aims for at least 1,500 biotech start-ups
- Govt in talks with various mkt to accept Indian drug norms
- Centre to introduce Bill for biotech centre in Faridabad
- WHO recommends pilot demo projects for world’s first Malaria vaccine
- India, EU agree to re-start talks on free trade pact early next year
- Sanofi supplies injectable polio vaccine to government
- India, Germany to set up Centers of Excellence in Agriculture

MARKET / COLLABORATION

- India’s first Industry-Academia collaborative partnership for Medical Devices R&D takes shape
- AIIMS, George Institute join hands for research on Type 2 diabetes
- US biotech firm Hysun Biomedical enters India
- Roche launches costliest cancer drugs in India
- Revamped DNA analysis kit gets US nod
- Mexico to get world’s first dengue fever vaccine
- New medicine for Hepatitis C treatment launched
- Strand gets into personalised treatment market in US
- Natco gets DCGI approval to launch generic hepatitis-C drug Harvoni in India

MEDICAL BIOTECH

- Young Kashmir scientist behind discovery of fast-acting HIV antibodies
- Genes Linked to Peripheral Artery Disease Identified
- Drug from banana protein could help fight AIDS, Hepatitis C and influenza viruses
- New blood cancer drug shows promise in first clinical trial
- New Ebola vaccine safe, stimulates strong immune response
- Novel insulin pill to effectively manage diabetes
- Plant-based drug can fight resistant TB
- India’s first MRI machine to be out in market by 2018
- Clue to Hawking disease emerges
- CSIR’s nonClonableID tag to check duplicate drugs
- New treatment to target mutated cancer cells
- Researchers Develop One–Step, Low Cost Method for Hepatitis C Virus Detection
- New method removes nanoparticles from blood with ease

AGRI BIOTECH

- Centre receives proposal for commercial planting of GM mustard
- Vermont dairy farmer says biotech crops essential
- Govt to screen GM cotton hybrids after pest attacks
- Plants use chemical weapons to poison neighbours, research says
- Explore option of genetically modified pulses: NITI member
- Orphan gene may have potential to boost protein value of crops, according to Iowa 27 state university research
- Centre to control BT cotton seed prices by fixing MRP
- Have strong bio-safety systems for GM crop: Swaminathan

R & D IDEAS

- Cancer spread process revealed
- New approach toward a broad spectrum malaria vaccine
- UNL, Johns Hopkins researchers identify DNA of algae virus in humans
- Human liver cells successfully grown in lab
- Crucial brain chemical made from human stem cells
- Anti-cancer molecules ‘discovered’ by varsity in MP
- CSIR-CCMB scientists prove scientific basis for ancient ayurvedic medicine through genome analysis
India unveils new guidelines for clinical research involving children

Regulatory Affairs Professional Society  
October 15, 2015

India for the first time in its history has released comprehensive guidance related to the ethical specifics of biomedical research in neonates and children. The pragmatic guidelines from the Indian Council of Medical Research (ICMR) set out general principles that can be applied in most situations to cover the ethical and legal issues that researchers need to consider when carrying out such biomedical research General Guidance

First and foremost, the guidance calls for research involving children to take into consideration the unique physiology, anatomy, psychology, pharmacology, social situation and special needs of children and their families. And in general, the drugs intended for the children’s and neonates’ research should be tested for safety, pharmacokinetics, and at least initial indications of efficacy in adults before being tested in children. "It may often be appropriate to defer pediatric testing until adult testing has reached Phase III or beyond, when substantial data are available on the safety and efficacy of a drug in adults," the guidelines say.

Interventions intended to provide therapeutic benefit should be at least as advantageous to the individual child as any available alternative interventions. "The risk presented by interventions not intended to benefit the individual child participant should be low when compared to the importance of the knowledge that is to be gained," the guidelines add.

Informed Consent

ICMR notes the sensitivity around research involving children, noting that children usually lack the capacity to provide informed consent and the authority to allow a child’s participation in research "rests with parents or guardians, who must provide their permission. However, with respect for children’s emerging maturity and independence and investigators must seek to involve children in discussions about research and obtain their assent to participation." In children between the ages of seven and 12 years, oral assent must be obtained in the presence of a parent or legal guardian, while for children between the ages of 13 and 18, written assent must be obtained.

Other Provisions

In addition to informed consent, the guidelines also deal with safeguard systems, such as institutional ethics committees and data monitoring committees, compensation for participants (which "should not influence parents’ or children’s decisions to participate in research"), as well as other special situations, including Internet- and school-based research in children, and neonate and adolescent research.

The guidelines, which follow the release of the third iteration of the "Ethical Guidelines for Biomedical Research on Humans" from 2006, were developed in line with the Institute of Medicine's pediatric research guidelines in the US, the Medical Research Council guidelines in the UK, EU guidance and through discussions with experts in bioethics in India.

Katoch committee on API asks govt to initiate measures for stronger industry-academia interaction

Pharma Biz  
October 19, 2015

The Katoch committee on Active Pharmaceuticals Ingredients (APIs), constituted by the Department of Pharmaceuticals (DoP) last year, has recommended to the government to initiate measures for stronger industry-academia interaction by facilitating the to and fro movement of scientists between industry and
academic institutions. The committee, which recognised the fact that investment in research and development (R&D) is essential to ensure competitive edge, further recommended for an institutional mechanism for ministry of human resources, and various science departments and agencies like DST, DBT, CSIR, ICMR etc to work together/ in synergy on R&D relevant for best procedures of production. To further boost the API industry in the country, the committee which was constituted to formulate a long term policy and strategy for promoting domestic manufacture of APIs/bulk drugs in the country, recommended for import duty exemption on import of capital goods in respect of R&D and manufacturing of vaccines and APIs.

Innovation should be measurable and awards to the scientists and industry who contribute to the development of improved processes relevant to bulk drug industry should be made, the committee recommended and further said that the technology development financing should also be repaid. On providing assistance on machines equipment, the committee recommended that the incentives to the manufacturers for setting up large plants and imports of technology that will reduce the cost of production need to be worked out. Allocation of adequate quantity of coal and electricity at concessional rates may also be considered. A scheme on the pattern of the modified special incentive package for IT hardware, etc. may be considered, the committee in its report said.

In order to formulate a long term policy and strategy for promoting domestic manufacture of APIs/bulk drugs in the country, a high level committee headed by Dr. V.M. Katoch, the then Secretary, Department of Health Research (DHR) was set up by the DoP last year which submitted its report in February, 2015. The committee has made sweeping recommendations for revival of API manufacturing in India including tax free status to cluster developers and cluster participants for 15 years.

**Scientifically validated Rs 5 anti-diabetes herbal drug launched by CSIR**

The Times of India  
October 26, 2015

A scientifically validated anti-diabetes herbal drug, named 'BGR-34', was launched by a Council of Scientific and Industrial Research (CSIR) lab in Lucknow. A combination of natural extracts from plants, the drug is based on Ayurveda and has no side effects. The drug is for management of type-II diabetes mellitus. The drug has been jointly developed by two CSIR laboratories, National Botanical Research Institute (NBRI) and Central Institute for Medicinal and Aromatic Plant (CIMAP). It was launched on the 62nd annual day of the NBRI for commercial manufacturing and marketing by M/s Aimil Pharmaceuticals Pvt Ltd, New Delhi.

"The drug has extracts from four plants mentioned in Ayurveda and that makes it safe," said Dr AKS Rawat, Senior Principal Scientist, NBRI. It has been tested on animals and scientific study has found it safe and effective, with clinical trials showing 67 percent success. The drug boosts immune system, works as antioxidant and checks free radicals. Though there are other anti-diabetes herbal drugs in the market, 'BGR-34' has been validated scientifically. The drug will help maintain normal blood glucose levels, reduce chances of complications due to persistent high blood glucose levels and impart a good quality life to patients with high blood sugar levels.

**DBT launches Distinguished Biotechnology Research Professorship scheme**

Pharma Biz, October 23, 2015

The Department of Biotechnology (DBT) has launched the Distinguished Biotechnology Research
Professorship scheme to utilise the expertise of active superannuated scientists who have made outstanding research contributions in biotechnology and related fields. The main aim of the scheme is to utilise the expertise of superannuated scientists, who are scientifically active and capable of making significant research contributions in biological sciences, biotechnology and related fields promoted by DBT. The Professorship will provide recognition to a person who has made outstanding scientific research contributions and is still able to extend his expertise and services for advancement in the biotechnology related fields.

The scheme will enable the selected scientist to continue to contribute to the subject of his/her choice and thus remain active in the country’s forum of Senior Eminent Scientists of Biotechnology field. The DBT Distinguished Research Professorship may continue to work in his/her own institution or in any other suitable institution within India. For getting eligibility for this programme, the scientist should be a distinguished Indian scientist in biotechnology or related fields. He/she should be truly outstanding and continue to publish research work of very high standard. He/she should be a fellow of at least one of the following national academies like Indian Academy of Sciences, Bengaluru; National Academy of Sciences, Allahabad; Indian National Science Academy, New Delhi; and National Academy of Agricultural Sciences.

The tenure of the Distinguished Biotechnologist Award would be for a period of three years extendable for further two years based on the review of work undertaken by the scientist in the first three years. Thus, the tenure of the award would be for a maximum period of five years, or till the awardee attains the age of 70 years, whichever is earlier. Earlier, the DBT had initiated the scheme in 2008-09 to recognise eminent scientists who have made outstanding contribution in biological sciences and have superannuated. The scheme will honour those eminent scientists having recognition of the highest kind and who are still contributing scientifically and remain active in the country’s forum. It will facilitates these eminent Indian scientists to continue to make outstanding contributions to science.

India aims for at least 1,500 biotech start-ups

The Economic Times
Nov 13, 2015

India aims to scale up start-ups in the biotechnology sector to at least 1,500 in the next two to three years to boost technological interventions in the health and agriculture sectors, a senior biotechnology department official said. "We presently have around 500 start-ups in the biotech sector. It is less in comparison with other sectors. We plan to scale it up to 1,500 to 2,000 in the next two to three years," said Renu Swarup, Department of Biotechnology's Senior Adviser and Managing Director of the Biotechnology Industry Research Assistance Council (BIRAC).

She pointed out that there was a growing market for biotech products and services given India's population and its needs. Biotech start-ups are into bio-pharma (diagnostics and therapeutics), agricultural (biofertilisers, hybrid seeds etc.), bioinformatics and drug development, etc. "They are directly or indirectly linked to the health and agricultural sectors," Swarup told IANS. Prime Minister Narendra Modi earlier this year announced a 'Start-up India, Stand up India' campaign to promote bank financing for start-ups and offer incentives to boost entrepreneurship and job creation. "Under the new initiative, if we can create a favourable business environment, we can tap into our own products and know-how for solutions in health and agriculture," she said. It would also help researchers to become 'tech-preneurs'. "We have seen
good interventions happening in Odisha and Tamil Nadu,” said Swarup. The Indian biotech industry holds about two percent share of the global biotech sector. At present India is ranked 12th in the world in the biotech sector and third in the Asia-Pacific region. By 2017, the size of India’s biotech industry is estimated to increase to $11.6 billion from $4.3 billion in 2012. Indian biotech entrepreneur Kiran Majumdar Shaw has said that the emergence of biotech start-ups is resulting in a reverse brain drain. Currently, Swarup said, new products have emerged from the Grand Challenges India (GCI) Interventions. The GCI was jointly launched by BIRAC under the Department of Biotechnology and the Bill and Melinda Gates Foundation in 2013. “These include improved sanitation technologies and bio-digester designs. Initially, they will be showcased as demonstrations on a large scale and subsequently introduced in the market,” she said.

Govt in talks with various markets to accept Indian drug norms

Business Standard November 30, 2015

India is nudging semi-regulated markets like Myanmar and Kenya to accept its drug standards, instead of the US or British norms, a move aimed at helping many Indian drug makers to save cost on upgrading to international standards. “We are in talks with various semi-regulated markets in Association of Southeast Asian Nations region, Africa and South Asian Association for Regional Cooperation countries to accept Indian Pharmacopoeia instead of British Pharmacopoeia or the US Pharmacopoeia,” Pharmaceuticals Export Promotion Council of India (Pharmexcil) Director General P V Appaji said. To shore up support for this, Pharmexcil has invited 10-15 regulatory heads from various nations to participate in the Indian Pharmaceutical Congress at Mysuru, he added. “We are already in talks with representatives from Ghana, Kenya and Myanmar regarding the issue,” Appaji said.

“We are telling these markets the Indian drug standards are also at par with the USP or BP. If they accept, both Indian drug industry as well as these countries would benefit.” The move would help many firms, which are solely following IP, to save on time, packaging and other costs needed to adopt BP or USP.

"If they accept then these markets would be able to get drugs from the stock meant for Indian market, leading to saving in terms of cost and time. Also they could avail of certain life saving drugs well in time", Appaji said. Currently, Indian Pharmacopoeia (IP) is only followed in the Indian market. "It won’t be an easy task (making these countries accept IP). We will have to instill confidence in them by inviting them to our manufacturing facilities, show them our standards. Moreover, Indian embassies would have to follow up so that we get desired results", Appaji said.

Centre to introduce Bill for biotech centre in Faridabad

The Tribune December 2, 2015

The Union Cabinet gave its approval for introducing a Bill for the setting up a Regional Centre for Biotechnology in Faridabad. The decision was taken at a meeting of the Union Cabinet chaired by Prime Minister Narendra Modi. According to an official statement, the objective of the Bill is to provide a legal status to the centre so as to function independently as an autonomous body and also an institution of national importance for education, training and research in biotechnology.

The centre has already been established by an executive order of the Government of India in November 2008 after the approval by the Union
The World Health Organization (WHO) has recommended pilot demonstration projects to understand how best to use RTS,S—the world's first vaccine against malaria. In July, European drug regulators recommended that the vaccine developed by British drugmaker GlaxoSmithKline Plc. in partnership with the PATH Malaria Vaccine Initiative, should be licensed for use on babies in Africa at risk of the mosquito-borne disease. The meeting between the Malaria Policy Advisory Committee and the Strategic Advisory Group of Experts on Immunization (SAGE) has been hailed as historic by WHO. The group met with the Malaria Policy Advisory Committee (MPAC) to consider the evidence on the efficacy and safety of the malaria vaccine. “The committees agreed that pilot implementations should be the next step with this vaccine,” said Fred Binka, acting chair of MPAC, in a WHO statement.

“The question about how the malaria vaccine may best be delivered still needs to be answered,” said Jon S. Abramson, chair of SAGE. “After a detailed assessment of all the evidence, we recommended that this question is best addressed by having 3-5 large pilot implementation projects,” he added. These demonstration projects could include a million children. This recommendation from WHO comes a day after a study published in the *New England Journal of Medicine* showed why RTS,S only provides partial protection to vaccinated children. This study conducted by the US National Institutes of Health was carried out using new highly sensitive genomic sequencing technology and found that genetic variability in the surface protein targeted by the RTS,S vaccine likely played a significant role.

A child needs four doses of the vaccine to be fully protected. The biggest challenge is that while the first three doses are given one month apart, the fourth dose is given after an 18-month gap. Without the fourth dose, the children have no shield against severe malaria. Another challenge is that the malaria vaccine acts against P. falciparum, the most deadly malaria parasite and the most prevalent in Africa, but is ineffective against P. vivax malaria which predominates in many countries outside of Africa including India. In India, at least a million malaria cases are reported annually and result in deaths ranging from 500 to 1,500, according to Indian government records. Globally, there are annually 3.2 million cases of the life-threatening disease caused by the bites of infected female mosquitoes. In 2015, Sub-Saharan Africa was home to 91% of the global malaria deaths. The vaccine is currently being looked at as a complementary malaria control tool along with proven malaria preventive, diagnostic and treatment measures.
Indian Joint Secretary in the Commerce Ministry Anita Praveen has been appointed as the new chief negotiator for the talks and negotiations are expected to start early next year. The India-EU FTA — formally known as the Broad-based Trade and Investment Negotiations — seeks to liberalise markets in goods and services, result in easier flow of investments and bring about stronger rules in areas like government procurement. The EU is one of the largest trading partners of India accounting for a bilateral trade of $100 billion against India’s total foreign trade of $760 billion in 2014-15.

Sanofi supplies injectable polio vaccine to government

Sanofi Pasteur and its affiliate Shantha Biotechnics are in the process of supplying their injectable polio vaccines, through UNICEF, to the Indian Government for its universal immunisation programme (UIP). The development comes even as the Centre announced the inclusion of the injectable, inactivated polio vaccine (IPV) into the UIP. India has been officially certified as being polio-free. But neighbouring Pakistan and Afghanistan still report cases of wild polio. Sanofi Pasteur is the vaccines division of French drugmaker Sanofi and it has already supplied its Imovax Polio (IPV) to the Government programme. Sanofi said that the supply of ShanIPV manufactured by its Hyderabad-based affiliate Shantha Biotech would take place soon.

“With the introduction of IPV in their immunisation schedule, India moves the world much closer to being polio-free,” said Olivier Charmeil, President and CEO of Sanofi Pasteur. “As a company deeply rooted in India, we are very proud that vaccines produced by both Sanofi Pasteur and Shantha will be used in this vital step towards a polio-free world. We have worked as partners of the government of India for many years, with this day in mind.” Over 20 million newborns will
eventually benefit from this new vaccine every year, Sanofi said. November was the cut-off to introduce IPV in 17 high-risk States and four Union Territories. In January, the IPV would be introduced in nine medium risk states and by March 2016, the IPV would be rolled out in six low-risk States.

Oral, injectable vaccines

Oral polio vaccines have been the key in the UIP, but the World Health Organisation recommends that the live OPV be supplemented and then replaced by an inactivated IPV. OPV and IPV stimulate the body’s immune system in slightly different ways so children who receive both should be even better protected against the disease, a note from the company said. The OPV contains a mixture of live attenuated poliovirus strains. So, despite being safe, it is not advisable to be used after achieving a polio-free status: when polio no longer exists in the wild, live virus cannot still exist in a vaccine, the note explained.

Polio eradication

The universal introduction of IPV, a vaccine that has been used in many countries of the world for years, is a necessary step towards achieving a polio-free world by 2019 according to the Global Polio Eradication Initiative Endgame Strategic Plan. More than 110 countries have introduced IPV in their immunisation calendars, the note said.

India, Germany to set up Centers of Excellence in agriculture

Biospectrum India
October 6, 2015

German Agribusiness Alliance and Agriculture Skill Council of India (ASCI) has signed a Memorandum of Understanding (MoU) in a meeting between the Agriculture Ministers from the two countries Mr Christian Schmidt from Germany and Mr Radha Mohan Singh from India, in order to cooperate with each other for the purpose of jointly developing the establishment of "Indo-German Centers of Excellence in Agriculture" aimed at creating a Platform for practical skill development in agriculture in India. The inclusion, participation and funding from the German private sector shall be coordinated by the German Agribusiness Alliance.

The centre of excellence will cover four major areas such crop production (including agricultural machinery/mechanization and postharvest handling) and marketing, horticulture crops management, production and value chain integration, cattle breeding / milk production, procurement and marketing and poultry/egg production.

Mr Joerg Rehbein, spokesman for the German Agribusiness Alliance said, "The prime objective of this collaboration would be to provide practical professional skill training as well as practical demonstrations of modern technologies and methods (capacity building) to various stakeholders of the agriculture development ecosystem." He further added, "With this initiative, we hope to raise awareness on emerging areas of agriculture technologies and their application, and to adopt best skill development practices and concepts from India and Germany."

Mr Sanjeev Asthana, Chairman, ASCI said, "The proposed Indo-German Centers of Excellence in Agriculture shall provide both short and long-term practical, professional skill training on modern technologies and methods, and organize demonstrations of technological advancements. The activities would target to reach farmers as well as farm workers and wageworkers in agriculture related industries. In addition, the project shall be used to train trainers of certified private or state training providers and facilities. The Centers shall cover different areas of agriculture and shall be set up in co-operation with agriculture institutions".
India’s first Industry-Academia collaborative partnership for medical devices R&D takes shape

Biospectrum
November 6, 2015

Association of Indian Medical Device Industry (AIMED) has announced the launch of ‘UdaiMed’, a new sunrise forum for collaborative interface between User, Developer, Academia, Industry and Medical Device Development in India. The objective of this momentous milestone collaboration for academic-industry in India is to make on-campus research more aligned to medical device industry’s needs and catalyze ‘Make-in-India' program. To take forward this objective, AIMED and UdaiMed also signed its first MoU with TiMed(Technology Business Incubator), a not-for-profit registered society promoted by SreeChitraTirunal Institute for Medical Sciences and Technology (SCTIMST), Thiruvananthapuram, for encouraging innovation and entrepreneurship in medical technologies through technology business incubation support to innovators, start-ups and industry. SreeChitraTirunal Institute is an Institute of ‘National Importance' created by an Act of Indian Parliament in 1980 and SCTIMST-TiMed is financially supported by the Department of Science & Technology (DST), Government of India and the Kerala State Industrial Development Corporation (KSIDC). Under the terms of new partnership, Shree Chitra will launch TiMed a ‘Technology Business Incubator’ with the broad objective of supporting and facilitating innovation, entrepreneurship, start-ups, new product development specifically aimed at medical devices development and biomaterials domain. TiMed will offer office and laboratory space with several common facilities like internet access, library, canteen, video-conferencing facilities for taking forward this collaboration. According to Mr Rajiv Nath, Forum Coordinator for AIMED and a signatory to the MoU between the two bodies, "The partnership between AIMED led UdaiMed and TiMed is a milestone for industry-academia partnership in the country which will foster world class practical research in India, catalyzing Make-in-India mission, help reduce humungous import dependency in medical devices and bring down overall healthcare cost." Explaining the need for such an initiative, Mr Nath pointed towards the ground realities of campus R&D in India stating that, "R&D institutions and engineering colleges do product development in isolation while industry has little or no idea of work being done there, and often such research have no relevance for industry. Collaboration between institutions and industry is completely absent even as most development is for peer academia acclaim rather than meeting industry’s needs or contributing to country’s competitive prowess." As a next step, Dr Jitender Sharma, Head of Healthcare Technology Division of NHSRC, MOH&FW (also party to this initiative)said, "AIMED/UdaiMed could request the Government to auction all Patents which are not yet commercialized so that these can be put to use by Indian manufacturers for the benefit of Indian consumers and medical fraternity".

Speaking on behalf of SCTIMST-TiMed, Mr Balram Sankaran, CEO, said, "Developing and commercializing medical devices is very challenging but extremely critical for competitive edge of our country. The partnership between TiMed and UdaiMed will help nurture a much needed eco-system which can deliver great results. We are extremely delighted with this partnership."

AIIMS, George Institute join hands for research on Type 2 diabetes

Drug Today, November 14, 2015

All India Institute of Medical Sciences (AIIMS), New Delhi, has joined hands with the George Institute
for Global Health, Australia, to conduct research on whether lifestyle modification programme can delay the onset of Type 2 diabetes in women with gestational diabetes mellitus (GDM). GDM is a major problem in pregnancy. GDM is diabetes developing during pregnancy when the body is not able to make enough insulin. The research involves conducting a randomised trial of a lifestyle modification programme to determine whether it can be applied and affordably brought to scale in Bangladesh, Sri Lanka and India. “The development of diabetes in women with GDM can be prevented or delayed. It has been shown in research settings that healthy diet and physical activity aimed at weight reduction can delay or prevent the development of diabetes in women with GDM,” said Prof Nikhil Tandon, HoD of Endocrinology at AIIMS. “Previously thought to be a relatively benign condition, it is now known that having GDM puts women at high risk of subsequently developing Type 2 diabetes — a condition that needs lifelong treatment and is associated with a number of serious complications,” Tandon added. “But we do not know how to best achieve such behavioural changes,” he said. Professor Anuskha Patel, Chief Scientist of the George Institute for Global Health said if the intervention is found to be effective and scalable, the development of Type 2 Diabetes could be delayed or prevented in more than a quarter of a million young South Asian women over a 5-year period. Type 2 diabetes is the world’s fastest growing chronic disease. Over 347 million people have diabetes with more than 80 percent of these living in low-middle income countries. “In pregnancy, the placenta makes hormones that helps the baby to grow and develop. Gestational diabetes occurs because these hormones also block the action of the mother’s insulin,” said Prof Patel, adding that the hormones of pregnancy causes resistance to the actions of insulin and lead to higher blood sugar levels in women who have risk factors for diabetes. The feasibility study conducted in India in 2011 and led by Professor Tandon was supported by a BRIDGES Grant from the International Diabetes Federation. This study, along with behavioural interventions shown to prevent weight gain in pregnant women and young mothers in Australia, have laid the foundation of the intervention that will be developed and evaluated in 1400 women from India, Bangladesh and Sri Lanka. Collaborating partners include Monash University in Australia, The University of Kelaniya in Sri Lanka, ICDDR,B in Bangladesh, and the Centre for Chronic Disease Control, India.

US biotech firm Hysun Biomedical enters India

Business Line
December 11, 2015

US-based biotechnology company Hysun Biomedical Inc has forayed into the Indian market. The company has also tied up with a local player Phyto Biotech to manufacture health supplements in India. The company will start with manufacturing its diabetic supplement Suga Balanz in India, which it has launched in the country. Both the partners will be making initial investments worth $15 million. The two will manufacture and sell the product with an initial capacity of one million bottles. In a statement, Samuel Yue, Founder, Hysun Biomedical Inc, said: “With the launch of our maiden product, we look forward to make a significant contribution to the growing healthcare industry in India. We see huge market potential here, given the large number of diabetic and pre-diabetic people in the country.” Meanwhile, Karan Kakad, Director -Marketing, Phyto Biotech, said: “Suga Balanz, which was being manufactured only in US, will now be manufactured in India also. It will be made available in India and also exported to global markets.” He said that the lower manufacturing cost will make it more viable for some of the global price sensitive market.
Roche launches new breast cancer drugs in India

Swiss drug major Roche has launched in India two new medicines for treating breast cancer claiming increased survival benefit and improved quality of life for patients. "The new drugs, 'Perjeta' and 'Kadcyla', have been shown to both extend survival and improve quality of life in their approved applications for metastatic HER2-positive breast cancer," Roche Pharma India said. Roche Pharma India Managing Director Maturin Tchoumi said: "The introduction of these therapies is a significant milestone in the treatment of HER2-positive metastatic breast cancer in India and reaffirms our commitment to bring Roche's innovative medicines to patients in India as quickly as possible." These targeted medicines represent a completely new way to treat HER2-positive metastatic breast cancer, with which the company aims to help women in India live as long and as well as possible, he added. "With its targeted breast cancer medicine Herclon (globally known as Herceptin), Roche has helped transform the treatment of HER2-positive breast cancer over the last several years in India," Roche said. Roche Products (India) Private Ltd is a wholly owned subsidiary of the Switzerland based Roche Group and has products in therapeutic areas such as oncology, virology, transplantation, anemia and rheumatoid arthritis.

Revamped DNA analysis kit gets US nod

Two years after personal genetics startup 23andMe was ordered by US authorities to stop selling its DNA test kits, a revamped product has gained market approval, the company said. The California-based firm announced the launch of its new "Personal Genome Service," which will test for mutations that could lead to disease. "We've worked with the FDA (Food and Drug Administration) for nearly two years to establish a regulatory path for direct-to-consumer genetic testing," said a statement by 23andMe co-founder and CEO Anne Wojcicki, ex-wife of Google co-founder Sergey Brin. "We are a better company with a better product as a result."

The new product is a "complete redesign," offering "an entirely new experience," for $199, said the statement from the company, which is named after the 23 pairs of chromosomes in the human body. Customers will get "a detailed but easy to understand genetic information service," along with ancestry and wellness reports. The company also promised "personalized insights based on analysis of 650,000 genetic variations," and the "only service available direct-to-consumer with reports that meet FDA standards." It also mentioned "the chance to find and connect with DNA relatives in a database of more than one million customers. The FDA had barred the company in 2013 from selling its saliva analysis kit aimed at helping customers determine their genetic risks for diseases such as diabetes, coronary heart disease and breast cancer, saying it was a "medical device" which required regulatory approval.

Medical experts said the company's test has been completely overhauled, including no longer offering risk analysis on major illnesses such as heart disease, breast cancer and Alzheimer's. "The company is not testing the diseases that raised most concerns in the past," said Cecile Janssens, professor of epidemiology at Emory University, who described the new product as "substantially improved" in terms of information provided. "It does not test predisposition to common diseases such as heart attack, asthma and hip fractures, for which lifestyle factors are often more important; it does not test high risk variants such as BRCA1 and BRCA2 for breast and ovarian cancer and APOE for Alzheimer's."
Sanofi said it developed the vaccine, Dengvaxia, over the past 20 years. Some 40,000 people will receive the treatment in Mexico in an initial phase. "With this decision, Mexico moves ahead of all other countries, including France, to tackle the spread of this virus," said the health ministry in a statement. Dengue fever affects more than 400 million people a year across the world, mainly urban areas in tropical and sub-tropical climates. It is a leading cause of hospital admissions in most Latin American and Asian countries, says the WHO. Most of the victims are children.

The vaccine will be available only to children over the age of nine, and adults under 49 who live in areas where the disease is endemic. It is designed to prevent four types of dengue virus, said Sanofi. "It's a very important moment in the history of public health," The Head of Sanofi Vaccines Division, Olivier Charmeil said. The company said it spent more than $1.6bn (£1bn) developing and creating the treatment. The symptoms of dengue fever are similar to those of a severe flu. It is transmitted from person to person by the Aedes aegypti mosquito, which also spreads chikungunya, zika fever and other diseases. The first cases of dengue were registered in the 1950s in Thailand and the Philippines.

**New medicine for Hepatitis C treatment launched**

The Economic Times
December 20, 2015

Two new drugs were launched for fighting Hepatitis C at an affordable price as experts from across the globe gathered here to discuss progress in finding treatment to the dreaded Hepatitis B and C liver diseases. During a three-day conference organised by Institute of Liver and Biliary Sciences (ILBS) and Asia Pacific Association for Study of Liver (APASL), the experts resolved to find treatment for Hepatitis-B, which the World Health Organisation (WHO) has termed as a "major global health problem". According to WHO, an estimated...
They should not be discriminated against. Prevention is the best method of controlling the spread of these diseases. If we vaccinate all our newborns, we can eliminate Hepatitis B by 2080 and if we treat all, we can eliminate Hepatitis C by 2020," he said. Participating in the conference, Director of US-based Centers for Disease Control and Prevention John W Ward said "a variety of organisations and drug manufacturers are employing various activities to set drug pricing and increase affordability. "Given the public health benefits of HCV (Hepatitis C Virus) prevention, testing, care and treatment, the World Health Organisation is proposing global goals for the elimination of HCV transmission and mortality."

**Strand gets into personalised treatment market in US**

Business Standard  
October 5, 2015

Strand Life Sciences, an entity founded by Indian Institute of Science (IISc) professors, has begun offering personalised treatment to cancer patients in America. This is a first by an Indian company in the West. The Bengaluru-based company offers treatment options in the first 10 days, suggesting drugs, testing of tumours by sequencing 152 genes and helping oncologists begin treating patients. In the next two weeks, a full report is given for enhanced treatment, Strand, which has brought down the time taken for the first line of cancer treatment by half, provides the same personalised treatment to local patients in India at a cost of a PET scan. In India, it offers a package by sequencing 50 genes, to bring costs to less than Rs 20,000. "What we are doing is unique even to the West," says Vijay Chandru, Chairman. In 2000, Chandru, a Computer Scientist at IISc, along with colleagues Swami Manohar and V Vinay, built India’s first palm-size computer, the Simputer, to bridge the digital divide. Picopeta Simputers, the company they formed at IISc, was the first start-up incubated in an Indian academic institution. In 2005, Picopeta was acquired by software firm Geodesic.
Natco gets DCGI approval to launch generic Hepatitis-C drug Harvoni in India

Live Mint
December 15, 2015

Natco Pharma Ltd said the government has allowed it to launch the generic version of US-based Gilead Sciences Inc.’s hepatitis-C drug Harvoni in India. Natco is the second Indian drug maker to get Drug Controller General of India (DCGI) approval for generic Harvoni in India. The India drug regulator approved Hetero Drugs Ltd’s copycat version of Harvoni. Harvoni, the fixed-dose combination of ledipasvir-sofosbuvir of 90mg and 400mg, respectively, is an improved version of Gilead’s hepatitis-C drug Sovaldi or sofosbuvir. Natco will market generic Harvoni under the brand name Hepcinat LP in India. “Natco plans to launch this combination drug immediately, under its brand name Hepcinat LP, and through its strategic partners in India,” the company said in a statement. Natco said it will price its generic at Rs.25,000 for a bottle of 28 tablets.

Harvoni, approved by US Food and Drug Administration (USFDA) for the treatment of chronic hepatitis-C genotype-1 infection, was shown to have high cure rates of around 90 percent. Harvoni costs $1,350 per day in the US for a 12-week regimen. Natco entered into a non-exclusive licensing agreement with Gilead Sciences early this year to manufacture and market chronic hepatitis-C medicines, including Sovaldi and Harvoni for India and 100 other developing countries by paying percent royalty on sales. Gilead signed similar non-licensing agreements with 10 other large generic drug makers—including Hetero Drugs Ltd, Cadila Healthcare Ltd, Cipla Ltd, Mylan Laboratories Ltd, Ranbaxy Laboratories Ltd (now owned by Sun Pharmaceutical Industries Ltd), Sequent Scientific Ltd and Strides Arcolab Ltd—to sell cheaper versions of Solvadi and Harvoni in 101 developing countries having an average per capita income of less than $1,900 and account for about 54 percent of those with hepatitis-C.
Genes linked to peripheral artery disease identified

NDTV, October 22, 2015

Japanese researchers have identified three genes associated with peripheral artery disease, a common but debilitating disease that makes walking painful and that can, in serious cases, lead to limb loss. The work is the first to identify specific genetic factors with the condition, the researchers said. In addition to limb pain and difficulty in walking, Peripheral Artery Disease (PAD) can lead to major cardiovascular and cerebrovascular events, and is estimated to be the third leading cause of death associated with atherosclerosis. "What is important is that although this study does help to identify people who might be at risk for PAD, the findings could also be used to elucidate the mechanism through which PAD arises, and hence could help to identify therapeutic targets for future treatments," said study first author Kouichi Ozaki from RIKEN Centre for Integrative Medical Sciences in Yokohama, Japan.

The researchers began by collecting genetic information on 735 people who suffered from PAD from the BioBank Japan project and compared their genomes with 3,383 people without the condition. Looking for simple genetic variations - called single nucleotide polymorphisms, or SNPs - that were more common in the patients than in controls, the team identified three genes that were clearly associated with the disease. "It seems that people with these three gene polymorphisms are particularly vulnerable to this disease," Mr Ozaki noted. "The three gene polymorphisms (natural variations) were all found to be in the region flanking two different genes," Ozaki said.

Drug from banana protein could help fight AIDS, Hepatitis C and influenza viruses

Live Mint
October 23, 2015

An international team of scientists has shown that a protein isolated from bananas can work against viruses that cause AIDS, Hepatitis C and influenza, potentially opening the doors for a broad-spectrum anti-viral agent. The research published in the journal Cell focuses on banana lectin, or BanLec, a protein that...
scientists in 2010 proved fights off the AIDS virus, but also causes side-effects such as irritation and inflammation. The team of scientists has now generated a new version of BanLec called H84T that works without causing the side-effects. The protein has been tested on mice. “What we’ve done is exciting because there is potential for BanLec to develop into a broad spectrum anti-viral agent, something that is not clinically available to physicians and patients right now,” said co-senior author David Markovitz, professor of internal medicine at the University of Michigan Medical School. “But it’s also exciting to have created it by engineering a lectin molecule for the first time, by understanding and then targeting the structure,” he said in a university press release. Twenty-six scientists were on the team funded by the US and the European governments. Over the years, the scientists worked on understanding how BanLec links up with the virus as well as to sugar molecules on the outside of cells and how it causes side effects in the body by alerting the immune system. The results led them to change the gene so that the BanLec molecule would not cause inflammatory reactions in the body.

Although there are many years before this form of treatment can be tested on humans, the researchers of this study are looking to tackle the lack of anti-viral drugs that work against many viruses or against viruses that change rapidly, such as influenza. “Better flu treatments are desperately needed. Tamiflu is only modestly effective, especially in critically ill patients, and influenza can develop resistance to it,” said Markovitz. “But we also hope that BanLec could become useful in situations such as emergency pandemic response, and military settings, where the precise cause of an infection is unknown but a viral cause is suspected,” he added.

New blood cancer drug shows promise in first clinical trial

Deccan chronicle
November 12, 2015

A new blood cancer drug that targets a protein essential for growth of tumour cells has been found to be effective in patients resistant to current chemotherapies, a world-first clinical trial has shown. In the first-in-human study, the researchers from the University of Leicester and Leicester's Hospitals in UK looked at the efficacy of a new inhibitor, ONO/GS-4059, in the treatment of Chronic Lymphocytic Leukemia and Non-Hodgkin Lymphoma patients resistant to current chemotherapies. ONO/GS-4059 targets BTK, a protein essential for the survival and proliferation of the tumour cells. The study started in January 2012 and 90 patients were enrolled in different centres in the UK and in France. Patients with Chronic Lymphocytic Leukemia showed the best response and most of them are still on the study after 3 years, and remarkably without notable toxicities. “These patients were confronted with a cruel reality - they had failed multiple chemotherapy lines and there were no other treatment options available for them," said Harriet Walter, from the University of Leicester. "This drug has changed their lives; from desperate and tired they are now leading a normal and really active life. This is hugely rewarding and encouraging," Walter said. "We are dedicated to offer the best treatment options to our patients and the development of targeted therapies that increase the chance of therapeutic success and at the same time avoid toxicities generally observed in chemotherapies, is the most exciting progress in cancer research," said Martin Dyer, professor at the University of Leicester and Honorary Consultant Physician in the Department of Haematology at Leicester Royal Infirmary. The next step is now to see how best we can improve on these outstanding results, the researchers said. The study was published in the journal Blood.
New Ebola vaccine safe, stimulates strong immune response

The Times of India
November 19, 2015

A fresh clinical trial of a new Ebola vaccine has found that it is well tolerated, safe and stimulates strong immune responses in adults in Mali, West Africa and in the US. The study included the first testing of this vaccine in adult health care workers and other at-risk persons in Africa. It identified the dose to be used in subsequent clinical trials and for large-scale manufacture of the vaccine. According to a global consortium of researchers assembled at the behest of the World Health Organisation (WHO), if larger trials (some already ongoing in Mali) corroborate the vaccine’s clinical acceptability and immunogenicity, the vaccine can obtain regulatory approvals to become a tool to interrupt transmission in future outbreaks. This would be achieved by vaccinating all people who have come into contact with confirmed Ebola cases. "This is a crucial step on the road to using this vaccine in humans," said Myron M Levine, Associate Dean for Global Health from University of Maryland’s School of Medicine.

"This gives us essential information that the vaccine is not only well-tolerated but the high dose stimulates strong immune responses in adults in West Africa, the global region where the Ebola outbreak was rampant last year," he added. The investigators also found that the administration of a booster vaccination with another vector vaccine producing Ebola virus antigens led to further enhanced immune responses likely to be associated with long-lived protection. This approach provides a way to vaccinate health care workers and other frontline workers who live in areas where Ebola poses a threat to re-emerge and who need prior enduring protection. "If the vaccine is ultimately found to be safe and effective, it could offer crucial protection for contacts (family members, neighbours, etc.) of patients with confirmed Ebola disease in future epidemics, thereby helping to interrupt transmission," the authors noted. The vaccine consists of an adenovirus (cold virus) that has been modified so that, in humans, it does not cause illness and cannot multiply. It does not contain the entire virus but a single Ebola protein. The study compared the clinical acceptability and immune responses of 20 adult participants in Baltimore and 91 in Mali and each group was given different dosage levels of vaccine. The study found that there were no safety concerns and recommended that further studies be carried out. The paper was published in the latest issue of the journal Lancet Infectious Disease.

Novel insulin pill to effectively manage diabetes

India today.in
November 10, 2015

Indian-origin researchers in US are developing a novel insulin pill that can provide a painless and more effective blood sugar management option to those who suffer from diabetes. The drug delivery technology may also apply to a wide spectrum of other therapies, researchers said. "With diabetes, there’s a tremendous need for oral delivery," said Samir Mitragotri, a Professor in the Department of Chemical Engineering at the University of California - Santa Barbara. "People take insulin several times a day and delivery by needles is a huge challenge," said Mitragotri, who specialises in targeted drug delivery. For those who do not like needles, the discomfort injections can pose is a huge barrier to compliance, said Amrita Banerjee, a postdoctoral researcher in the Mitragotri Lab. "It can lead to mismanagement of treatment and complications that lead to hospitalisation," she said.
A pill could circumvent the discomfort associated with the needle while potentially providing a more effective dose, the researchers said. "When you deliver insulin by injection, it goes first through the peripheral bloodstream and then to blood circulation in the liver," Mitragotri said. Oral delivery would take a more direct route, he added, and, from a physiological point of view, a better one.

While oral medications to assist the body with insulin production have been around for a while, a pill that delivers insulin remains a highly sought goal of diabetes medicine. The main obstacle to its development has been getting the medication past the hostile proteolytic environment of the stomach and intestine without destroying the protein itself. In this case, the key is a combination of enteric-coated capsules and insulin-loaded mucoadhesive polymer patches that were optimised by Banerjee as part of her research. The new pill has demonstrated its ability to survive stomach acids with the protection of the enteric-coated capsule and deliver its payload to the small intestine.

There, the capsule opens up to release the patches that adhere to the intestinal wall, preventing access of proteolytic enzymes to insulin and, with the aid of a permeation enhancer, depositing insulin that can pass through to the blood. "This is the first essential step in showing that these patches can deliver insulin," Mitragotri said. Like any other novel therapy, however, it must undergo additional stages of testing and improvement before it can be considered as a viable treatment for diabetes. The drug-loaded mucoadhesive patches show early promise for other forms of therapy, as well, researchers said. "We can deliver many proteins that are currently injected," Mitragotri added.

**Plant-based drug can fight resistant TB**

Scidev.net, December 20, 2015

Scientists from India and the US say they have discovered a group of compounds that can kill *Mycobacterium tuberculosis*, the bacterium responsible for causing tuberculosis (TB), by disabling a major defence mechanism it uses to survive in the human body. Amit Singh at the Department of Microbiology and Cell Biology, centre for infectious disease and research at the Indian Institute of Science, Bangalore, says, “These compounds show tremendous promise as lead scaffolds for the development of new, anti-TB treatments. Specifically, these compounds inhibit the function of a critical enzyme responsible for survival of *M. tuberculosis*.” The study, supported by the National Institutes of Health, India’s ministry of science and technology and the Wellcome Trust-Department of Biotechnology alliance was published November in *ACS Chemical Biology*. Singh says the new compounds “belong to the ellipticine plant alkaloid family, which also is active in targeting cancerous cells”. He adds that the “active compounds have exerted a very high activity against drug-resistant *M. tuberculosis* strains isolated from patients of Indian origin.” Alkaloid-containing plants have been used from ancient times to treat diseases or as intoxicants. India has the highest burden of TB in the world with an estimated two million cases annually, with many individuals infected with the multi-drug resistant (MDR) and extensively drug-resistant (XDR) strains as well. Some 95 per cent of deaths from TB occur in developing countries in Asia and Africa. The six countries that stood out as having the largest numbers in 2014 were China, India, Indonesia, Nigeria, Pakistan and South Africa. Kate Carroll, Chemistry Professor at the Scripps Research Institute, Jupiter, Florida, and lead author of the study, stresses that individuals infected with dormant bacteria do not show any symptoms but may serve as a reservoir for *M. tuberculosis*. “The problem is that this reservoir is gigantic with an estimated two billion people in the world carrying latent TB infection.”
“These new compounds have shown potent bactericidal activity against active as well as dormant form of drug-susceptible and MDR/XDR strains, as well,” Carroll says. “Currently, we are testing their effectiveness in animal models of TB infection and once their pre-clinical and clinical effectiveness is confirmed, these compounds or their analogs can be potentially used in the treatment of MDR/XDR TB as well as persistent TB infection.” Carroll says the new compounds may be given alone, or more effectively, as a combination of multiple drugs. “These compounds can break a key bacterial defence and potentiate the action of other anti-TB drugs as well as kill persistent M. tuberculosis bacterium on their own,” she says. Singh’s lab has also generated a series of compounds that were found to exert efficient killing of drug-resistant superbugs. He proposes “targeting mechanisms involved in resisting oxidative stress or elevating the levels of oxidative stress inside bacterial cells” as strategies against TB infection.

**India’s first MRI machine to be out in market by 2018**

The Economic Times November 25, 2015

The Department of IT's R&D laboratory SAMEER will soon bring out India’s first MRI machine in the market by 2018. SAMEER is an R&D Laboratory set-up in 1960s for research, design and development of products in the field of RF and microwave systems. In a recent presentation to the Telecom Minister Ravi Shankar Prasad, Director-General SAMEER said the R&D laboratory was already in advance stages of product development of the machine which would enable use of imaging in medical diagnosis.

Prasad asked the organisation to revisit the mandate and explore more medical equipment which could be indigenously developed by the lab. "Prasad said that healthcare was a major focus area of the Modi government and encouraged the team to focus more on field," a senior officer said. Prasad also asked the research institute to work towards potential solutions to cyber security issues. Headquartered in IIT Powai, SAMEER also focuses on interdisciplinary research initiative addressing broader spectrum of electronics areas like optoelectronics, Digital signal processing, Navigational aids, radars, atmospheric remote sensing systems and Linear accelerators.

**Clue to Hawking disease emerges**

The Telegraph November 29, 2015

A team of Indian biologists has deciphered a shape-driven, lock-and-key type interaction between a protein and genetic material that they say could help explain a rare but incurable nerve cell disease called amyotropic lateral sclerosis. It's the disease that has confined celebrated British physicist Stephen Hawking to a wheelchair for decades. Scientists at the International Centre for Genetic Engineering and Biotechnology, New Delhi, have shown that a protein named TAF15 expressed in nerve cells and implicated in amyotropic lateral sclerosis (ALS) attaches itself to ribonucleic acid through complementary shaped molecular structures. "This protein-RNA interaction depends exclusively on the shapes of the two molecules - it is somewhat similar to how a cork fits into a champagne bottle," said Neel Sarovar Bhavesh, a structural biologist at the New Delhi centre who led the research study. Scientists do not know what triggers ALS, a progressive and usually fatal neurological disease in which nerve cells that direct the movement of voluntary muscles such as the arms, legs and the face suffer damage leading to muscle weakness and loss of movement control. A US National Institutes of Health document on the disorder says most ALS patients die from respiratory failure within about five years after
diagnosis, but about 10 per cent of ALS patients survive 10 years or longer. Hawking is one of the few exceptions, having already lived for more than half a century after being diagnosed with ALS in his early 20s. Neurologist John Landers at the University of Massachusetts Medical School in the US and his colleagues have implicated mutations in several genes, including TAF15, in familial or inherited ALS. But scientists estimate that the genetic cause of 50 per cent of ALS remains unknown. In the new study, Bhavesh and his colleagues examined experimentally the molecular handshake between TAF15 protein and a complementary RNA molecule in nerve cells. Through a mix of lab work and computer-based studies, they have shown that the concave-shaped face of the TAF-15 protein is the primary binding zone that interacts with the convex-shaped structure of the molecular sequence of the RNA. "But if there’s a mutation in the TAF15 protein, it can’t bind properly to the RNA. This sets off a cascade of genetic and biochemical events leading to misfolding of other proteins in the nerve cells," Bhavesh said. "This may be an underlying mechanism for the cell degeneration in ALS." Bhavesh and his fellow research scholars at the New Delhi centre, Maruthi Kashyap and Akshay Ganguly, have published their findings in the journal *Scientific Reports*. Their study is being viewed as an advance towards understanding the molecular basis of neuromuscular disease progression. "This work could be an important step towards identifying molecular targets for possible therapy in the future," said Ramakrishna Vijayacharya Hosur, a Senior Structural Biologist at the Tata Institute of Fundamental Research, Mumbai, who was not associated with the study. There is currently no cure for ALS, but doctors prescribe medications and physical therapy to relieve the disorder’s symptoms such as fatigue, muscle cramps and difficulty in speech to improve the quality of life for patients. A study at the All India Institute of Medical Sciences, New Delhi, of 119 patients suspected to have ALS over a five-year period has indicated that the average age of onset of the disease is 41 years for men and 48 years for women. Only six of the 119 patients had familial or inherited ALS. "Awareness of ALS has improved the chance of appropriate diagnosis," said Vinay Goyal, Professor of Neurology at the AIIMS, who was a member of the team that studied the 119 ALS patients. "Diagnosis helps patients and their families prepare themselves - but certain other neurological disorders can mimic the early symptoms of ALS, so it is important to refrain from diagnosis until we’re absolutely sure it is ALS."

**CSIR’s nonClonableID tag to check duplicate drugs**

Millennium post, December 18, 2015

The tag named, nonClonableID technology, is foolproof and the even a tag manufacturer cannot produce its duplicate, which is easily done in case of barcoding system. Explaining the new technology, a Senior CSIR official told Millennium Post that it has been developed to address the problem of counterfeit medicines through a holistic approach. “The CSIR and Billcare Ltd, Pune, parented on a project to demonstrate the ability of novel nonClonableID technology to address the unmet needs in medical product authentication and patient compliance under the CSIR-New Millennium Indian Technology Leadership Initiative (CSIR-NMITLI) programme,” the official said. “The nonClonableID is based on the principle of randomness of particles called blister technology. The tag, which is created out of blister, has both optical as well as magnetic properties, giving a unique identity barring its duplicity even by its manufacturers,” the official said. As a mechanism to check counterfeiting of drugs, a particular tag is put on the blister package and the tag reading machine authenticate the source of a particular drug soon after it gets introduced in the market. “Nowadays, every blister or bottle of drug is coming with a barcode, which provides them an identity, but it can be copied and
pasted on other blisters, which will give similar identity to counterfeit drugs too. The same barcode can be put on multiple of blisters and when those drugs are introduced in market, it is not possible to catch the authentic source,” the official said. “The moment you make this system robust, you will be able to ensure tracing the product whoever is introducing it in the market. Then, spurious drug holders wouldn’t come into the counterfeit act as they cannot introduce fake drugs into any particular cycle,” the official said. The CSIR official added, “At any stage, one can track the location of a particular consignment through IT communication portal. This technology adds another layer of protection to drug manufactures.” “We are enabling pharmaceutical companies to adopt this technology, so that they are able to authenticate the product and no third person can introduce a particular brand’s product in the market,” the official said. “We have tested this technology during the Commonwealth Games as Billcare had used it to manufacture nonClonable police IDs of Delhi Police personnel,” the CSIR official said.

Checking Counterfeit Drugs
1. The tag named nonClonableID technology is foolproof and even a tag manufacturer cannot produce its duplicate, 2. nonClonableID is based on principle of randomness of particles called as blister technology, 3. The tag, which is created out of blister, has both optical as well as magnetic properties, giving unique identity barring its duplicity even by its manufacturers, 4. The technology will address unmet needs in medical product authentication and patient compliance, 5. The technology ensures tracing the product whoever is introducing it in market, 6. In case of barcoding system, the code can easily be duplicated

New treatment to target mutated cancer cells
The free press journal, November 3, 2015
Oxford researchers have found the ‘Achilles heel’ of certain cancer cells – mutations in a gene which could be targeted with a new drug to kill cancer cells that are resistant to treatment, reports PTI. It is well known that mutations drive cancer cell growth and resistance to treatment. However, these mutations can also become a weak point for a tumour. The researchers from University of Oxford in UK found that was the case for cancer cells with mutations in a key cancer gene called SETD2. “Mutations in SETD2 are frequently found in kidney cancer and some childhood brain tumours, so we were excited when we discovered that a new drug we were studying specifically killed cancer cells with this mutation,” said study author Timothy Humphrey from Oxford Institute for Radiation Oncology. Researchers showed that cancer cells with a mutated SETD2 gene were killed by a drug called AZD1775 that inhibits a protein called WEE1. The team achieved this by exploiting the concept of ‘synthetic lethality’, where a combination of two factors kills a cancer cell. This has the potential to be a less toxic and more effective treatment than more standard approaches because it can specifically target cancer cells. “When WEE1 was inhibited in cells with a SETD2 mutation, the levels of deoxynucleotides, the components that make DNA, dropped below the critical level needed for replication,” said co-author Andy Ryan, from University of Oxford. “Starved of these building blocks, the cells die. Importantly, normal cells in the body do not have SETD2 mutations, so these effects of WEE1 inhibition are potentially very selective to cancer cells,” Ryan said. The research team have also developed a biomarker test to identify SETD2 mutated tumours, something that can be used immediately in cancer diagnosis.

Researchers develop one-step, low cost method for Hepatitis C virus detection
Biotechnin.asia
November 23, 2015
A highly cost-effective, one-step detection of active infection caused by Hepatitis C Virus (HCV) has been developed by researchers at the University of
New method removes nanoparticles from blood with ease

NDTV
November 23, 2015

A team of US engineers has developed a new technology that uses an electrical field to easily and quickly isolate drug-delivery nanoparticles from the blood. The electronic chip can also serve as a tool to separate and recover nanoparticles from other complex fluids for medical, environmental and industrial applications. Nanoparticles, which are generally one thousand times smaller than the width of a human hair, are difficult to separate from plasma - the liquid component of blood - owing to their small size and low density. Traditional methods to remove nanoparticles from plasma samples typically involve diluting plasma. These methods either alter the normal behaviour of the nanoparticles or cannot be applied to some of the most common nanoparticle types. "This is the first example of isolating a wide range of nanoparticles out of plasma with a minimum amount of manipulation," said Stuart Ibsen, post-doctoral fellow at University of California-San Diego. "We have designed a very versatile technique that can be used to recover nanoparticles in a lot of different processes," he added.

The new nanoparticle separation technology will enable researchers better monitor what happens to nanoparticles circulating in a patient's bloodstream. Scientists can also use this technology in the clinic to determine if the blood chemistry of a particular patient is compatible with the surfaces of certain drug-delivery nanoparticles. The chip contains hundreds of tiny electrodes that generate a rapidly oscillating electric field that selectively pulls the nanoparticles out of a plasma sample. "It's amazing that this method works without any modifications to the plasma samples or to the nanoparticles," Ibsen noted in the study published in the journal Small.
The GEAC took a decision last year to not disclose the agenda of its meetings or other information on the proposals it reviews pro-actively and provide it only in response to specific queries under the RTI Act. In the recent past, the environment ministry also refused to disclose data from biosafety tests of the transgenic mustard asked under the RTI Act stating that the issue (regarding GM mustard) was "under process". The applicant's appeal against the ministry's decision to not share data is now pending before the Central Information Commissioner. In the past, when appraising the Bt Brinjal for commercial release the GEAC, under the UPA government, had proactively put out selective information shared by the promoters and sought public comments on it. Then, on orders of the Supreme Court, it was also forced to put out all biosafety data from the trials on the specific transgenic plant. Subsequently, the GEAC recommended the commercial cropping of the transgenic Brinjal plant but the decision was over-ruled by the then environment minister. Pental said it was up to the government to decide if it wanted to disclose the biosafety data in public domain or not. Pental claimed his transgenic mustard hybrid variety provided a 30 per cent higher yield than other varieties. He also claimed the costs for the hybrid seed would be considerably lower. Critics of the GM Mustard hybrid say the comparison was made against non-hybrid seeds and other non-transgenic hybrids also provide similarly higher productivity. Organisations such as the Coalition for a GM-Free India, warn of contamination by transgenic mustard seeds, citing cases from the US and other countries and say the particular hybrid producing technology would aid seed manufacturers more than the farmers. Paintal claimed groups, individuals and NGOs opposing the technology do so on ideological grounds. He said the safety of GM Mustard had been proven by the continued cultivation, sale and export of Canola oil in Canada since 1995 and in the US since 2002, which is based on similar transgenic technology. He said three to four years had been wasted in conducting the bio-safety studies in India with the process having been complicated by Jairam Ramesh as environment minister for the UPA government.

Centre receives proposal for commercial planting of GM mustard

Business Standard
October 31, 2015

Since the United Progressive Alliance (UPA) government put a moratorium on commercial cropping of Monsanto's Bt Brinjal in 2010, the Centre has received the first-ever proposal for clearance in five years to let farmers grow a transgenic food crop - a genetically modified hybrid variety of the mustard plant. The decision on the proposal would have to be taken by the environment ministry on behalf of the Union government. This would not be the first time that a proposal for commercial cultivation of GM Mustard comes up before the government. In 2002, the then Union government had rejected proposal for commercial planting of private sector seed manufacturer's, Bayer's transgenic mustard plant. The debate, science and regulations on GM food crops has considerably evolved since then. Dr Deepak Pental, Developer of the GM mustard seed at Delhi University, said that he had sent the proposal to the Genetic Engineering Appraisal Committee (GEAC) in mid-September. The GEAC is the statutory authority that appraises proposals for field trials and commercial release of GM crops but its views are not binding on the government. The final call on such clearances lies with the Union Environment, Forests and Climate Change Minister. A senior official in the environment ministry said a date for the meeting of the GEAC had not been set as yet. The National Democratic Alliance has permitted field trials of GM crops in the past, despite opposition from Swadeshi Jagran Manch, an RSS-affiliate. Though decision-making on the issue has been put behind a veil of opaqueness
Vermont dairy farmer says biotech crops essential

The Eagle, October 23, 2015

Use of crops developed using biotechnology is a key to farmers stewardship of the land, according to Joanna Lidback, a Vermont dairy farmer, at a hearing of the U.S. Senate Committee on Agriculture, Nutrition and Forestry this week. # Lidback and her husband, first generation farmers with a 50 cow dairy operation and 200 acres of land, view the use of modern technology and innovation as essential to the environmental and economic sustainability of their operation. She provided an example from her own farm. Biotech crops are essential to keeping our feed prices affordable. To compare, a non-GMO basic feed would cost us $555 per ton; the similar conventional feed we currently purchase is $305 per ton,” she testified. “We purchase 16 tons of grain per month and if you do the math, we’d be paying an additional $4,000 a month or $48,000 a year for non-GMO feed. I don’t see how we could profitably farm with those increased costs; I’m certain our small farm would be pushed out of business.” Lidback testified on behalf of Agri-Mark Dairy Cooperative and the National Council of Farmer. Lidback keeps a blog documenting her family’s life on the farm (farmlifelove.com). She also shared her perspective on the Vermont law set to come into effect next year mandating labeling of foods containing genetically modified ingredients. In my opinion, the new label wouldn’t better inform consumers but instead serve as a warning sign,” Lidback testified. “If a small percent of consumers are to drive a GMO labeling requirement I believe it should be done in a voluntary and cohesive way at the federal level. Again, I don’t believe those consumers who can least afford it should have to bear the burden for such a small percentage of consumers who are pushing mandatory labeling.”

Government to screen GM cotton hybrids after pest attacks

Business Today, November 5, 2015

The government will screen genetically modified (GM) cotton hybrids on sale in the country to identify the varieties that are resistant to whitefly, a pest that recently caused extensive damages to crops in two northern states, a government official said. The whitefly attack on the Bt cotton variety in Punjab and Haryana was the first major infestation since India adopted transgenic cotton in 2002. It has stoked worries over the vulnerability of the GM seeds that yield nearly all of the cotton in the world's top producer. "The agriculture ministry does not want to take any chances as the pest could thrive and affect nearby farms growing vegetables," said P.K. Chakrabarty, an Assistant Director General of the Indian Council of Agricultural Research. "Out of the 1,128 hybrids, we have asked to see which have an inherent tolerance to whitefly," Chakrabarty told Reuters. "The government will screen the available hybrids and then put up a list. That will sensitise private producers to select suitable hybrids only." A joint venture of Monsanto with Maharashtra Hybrid Seeds Co Pvt Ltd, Kaveri Seeds and Bayer Bioscience Pvt Ltd are among companies allowed to sell GM cotton hybrids in India. Bt cotton was tweaked by scientists at Monsanto to produce its own insecticide to kill bollworms. But two years of drought in India have encouraged the spread of whitefly against which the strain has no resistance. The government now plans to educate farmers to use only those hybrids that are less vulnerable to whitefly, Chakrabarty said. There is no plan, however, to take any punitive action against the seed companies over the pest attacks.
Plants use chemical weapons to poison neighbours, research says

The Times of India
November 6, 2015

Plants release chemical poisons to destroy neighbouring plants in their bid for more space and sunlight, new research by a team of German and French scientists has shown. The poisons released are deadly - they change the very genetic structure of the victim plant preventing its growth and ultimately leading to its death. The existence of this chemical warfare, referred to as 'allelopathy', is widespread among many plant species, and has been known for a long time to scientists and agriculturists. But what had remained a mystery was how this strategy works. This appears to have been solved by the scientists. Work by Sascha Venturelli of the University of Tubingen, Germany and colleagues now sheds light on the inner workings of this plant chemical warfare. Plants are able to release chemical compounds from their roots into the soil, where the substances decay or are modified by microbes. Some of these products are toxic when the roots of neighboring plants take them up, the scientists found. Claude Becker, of the Max Planck Institute for Developmental Biology, Tubingen and one of the leaders of the study, explains the importance of the findings: "The phenomenon has been known for years, and many classes of allelochemicals have been identified over the last decades, but for first time we now understand the molecular mechanism of such a 'territorial behaviour' of plants". The scientists investigated the role a chemicals known as DIBOA and DIMBOA. These are released by several grass species, and their degradation products are well known for their toxicity. They alter the chemical structure of DNA leading to changed gene expression. In the model plant Arabidopsis thaliana, the scientists found that inhibition of histone deacetylases by the plant toxins lead to more histone acetylation and an increase in gene expression, ultimately causing plant growth to slow down. The study thus not only presents the first molecular mechanism for allelopathy, but also illustrates how environmental toxins can alter chromatin structure and gene expression. Allelochemicals are important regulators in natural and agricultural plant communities, and have repeatedly been associated with the success of invasive species in their new habitats. But there is more: there could be a link to fighting cancer too. "Herbal natural products in general hold great potential for the therapy of human diseases", says Venturelli. "We have found that these particular compounds efficiently inhibit the growth of human cancer cells, too." Indeed some inhibitors of histone deacetylases have already been approved as anti-cancer drugs. Michael Bitzer and Ulrich Lauer, initiators and co-advisors of the study explain on-going efforts: "Clinical trials at the University Clinics Tubingen currently assess the efficacy of these plant toxins in cancer patients." Understanding the mode of action of plant toxins could therefore also be of wider significance for medical research.

Explore option of genetically modified pulses: NITI member

The Economic Times
November 9, 2015

India should explore the option of genetically modified pulses to address the problems of widening demand-supply gap and rising prices in the domestic market in the wake of increasing weather fluctuation and greater susceptibility of the crops to insects, NITI Aayog member Ramesh Chand said. The Aayog, the premier think tank of the central government, has been given the task of identifying policy changes needed to address key problems plaguing the nation including issues related to food security over the long-term.
"The country should not mind accepting the genetically modified pulses since there has not been much success in augmenting domestic production using normal kind of agronomic procedures," Chand told ET. According to Chand, who is an agriculture expert, the government should explore the opportunities available in transgenic crops to reduce India's dependence on imports. "Short-term options are extremely restricted as far as prices of pulses are concerned. Hence, in the long run the government should attempt using GM pulses on a case-by-case basis to substantially increase domestic production," he said. Dal prices have seen a spike to even `200 per kilogram in some cities over the past few months, forcing the government to import more pulses. The many variants of dal - arhar, chana, toor, moong, urad and masoor - are the primary source of proteins and therefore the lifeline for vegetarians in India, estimated to be 30% of the population. From a long-term perspective, excessive imports of pulses are likely to impact India's efforts to achieve self-sufficiency, ensure rural livelihood and secure nutritional security. India is the world's largest producer of pulses but the output has stagnated at about 17.5 million tonnes, while demand has grown to an estimated 21.5 million tonnes in the current fiscal. Hence, every year the country is forced to import 15-20% of its domestic requirement. Global supply has restricted, though, since the whole of South Asia is a net importer of pulses, prompting India to explore alternatives means of production. Maharashtra is the largest kharif pulses producer in the country followed by Karnataka, Rajasthan, Madhya Pradesh and Uttar Pradesh. These five states together account for about 70 per cent of the country's total kharif production of pulses and almost every year some or all of these states witness weather related issues that affect the output.

‘Orphan gene’ may have potential to boost protein value of crops, according to Iowa State University research

Iowa State University
November 13, 2015

A recently published study from two Iowa State University scientists shows that a gene found only in a single plant species can increase protein content when introduced into staple crops. The research has implications for a wide array of crops, especially for staples grown in the developing world, where sufficient sources of protein are sometimes limited. “We’ve found that introducing this gene to plants such as corn, rice and soybean increases protein without affecting yields,” said Ling Li, an adjunct assistant professor of genetics, development and cell biology. Li has worked for years with Eve Syrkin Wurtele, a Professor Of Genetics, development and cell biology, on a gene they discovered in 2004 that appears only in Arabidopsis, a small flowering plant. Their studies of this gene, called QQS, have yielded several publications in peer-reviewed academic journals, a U.S. patent and multiple pending patents. Li and Wurtele refer to QQS as an “orphan gene” because it’s not present in the genome of any other organism. The gene regulates the protein content in Arabidopsis seeds and leaves, so Li and Wurtele wondered what would happen if they used transgenic technology to introduce the gene to other plants. Could it lead to increased protein in plants that humans commonly eat? In a paper published this week in the Proceedings of the National Academy of Sciences, the researchers show that the orphan gene works much the same way in rice, corn and soybeans. That’s good news for parts of the world where protein-rich foods are scarce, Li said. Protein deficiency leads to developmental problems in children, but protein-rich plants may present a solution, Wurtele said. “Most of the world relies on plants as a major protein resource,” Li said. “And protein that comes from animal sources requires more water, energy and
and resources to produce, so a diet that relies more on protein-heavy plants is more sustainable.” Getting such transgenic crops into the global market requires years of research, safety testing and millions of dollars, Wurtele said. Accordingly, the researchers are also looking at non-transgenic avenues to produce similar results. The key to such avenues may revolve around the protein to which the orphan gene binds, known as NF-YC4. That particular protein is present in all plants and animals, so it can be altered in crop species without resorting to a transgenic approach, Li said. By overexpressing, or producing more of, the NF-YC4 gene in staple crops, the researchers can increase the protein value of plants without using transgenes, which could save time and costs in the regulatory process, Li said. Scientists are still only beginning to grasp how orphan genes work and the value they represent, she said. Wurtele said she expects more scientists to “adopt” orphan genes in the years ahead to see what they’re capable of. “This is one orphan gene that we’ve shown has big potential,” Wurtele said. “And we believe there will be many more discoveries related to other orphan genes in the future.” The National Science Foundation, the United Soybean Board, the Iowa State University Research Foundation and the Iowa State University Center for Metabolic Biology supported the research.

Centre to control BT cotton seed prices by fixing MRP

The Times of India
December 13, 2015

The Centre has decided to control prices of cotton seeds including the genetically modified versions by fixing a uniform maximum sale price from March 2016, a move that would deal a major blow to global hybrid seed company Monsanto. It has also decided to fix and regulate the seed value and licensee fee including royalty or trait value, according to a notification issued by the agriculture ministry. Currently, Bt cotton seed is sold at different rates across the country. In Punjab and Haryana, it is priced at Rs 1,000 per packet of 450 grams, while it is Rs 830 in Maharashtra and Rs 930 in six states including Andhra Pradesh. In the notification dated December 7, the agriculture ministry said the Cotton Seeds Price (Control) Order has been issued for "uniform regulation" of sale price of cotton seeds with existing and future genetically modified technologies. The aim is to ensure cotton seeds are available to farmers at “fair, reasonable and affordable prices” and there is uniform rates for cotton seeds across the country, it said. The decision follows several representation by farmers and the National Seed Association of India for regulating sale price of Bt cotton and other varieties in the country. As per the notification, MRP of the cotton seed will be notified in the Official Gazette on or before March 31 of every year applicable for the next financial year. A seven-member committee will recommend MRP of cotton seed after taking into account the seed value, license fee which includes one time and recurring royalty (trait value), trade margins and other taxes, it added.

While the National Seed Association of India hailed the development but Mahyco Monsanto Biotech (India) Ltd (MMBL) a joint venture arm of Monsanto India, expressed disappointment. "By further regulating price and license fees, the order will suppress innovation and deprive farmers of new technologies and a competitive market place for their inputs," a MMBL spokesperson told PTI. "Contrary to the government's professed desire to enhance ease of doing business, the order also creates great unpredictability in the business environment by arbitrarily and unduly interfering with private contracts between technology providers and seed companies," he said. MMBL remains confident that the government will take into account views of all stakeholders and will continue to encourage innovation in Indian agriculture, he added. Indian farmers are seeking increasingly better technologies and other inputs that helps them grow their income and improve their livelihoods, not more regulation of prices, said.
MMBL, which has sub-licensed the Bt technology to 49 domestic seed firms. Bt cotton is the only GM crop allowed for commercial cultivation in the country. Over the last decade, Bt cotton technology has been adopted on over 95 per cent of the country’s cotton growing area, making India the second largest producer and exporter of cotton.

Have strong bio-safety systems for GM crop: Swaminathan

The Economic Times
November 27, 2015

Eminent Agriculture Scientist M S Swaminathan urged the government to put in place a strong bio-safety system for genetically modified (GM) crops which is acceptable to the public. He also expressed concern over malnutrition despite India achieving self-sufficiency in foodgrain following the success of the Green Revolution. "There are concerns about safety aspects of GM crops. NGOs came and destroyed the crops of Golden rice. It is important to set up a proper bio-safety system for GM crops which is acceptable by public," Swaminathan said on the occasion of golden jubilee of the Green Revolution.

Swaminathan, known to as the Father of Green Revolution in India, emphasised that research in GM crops should be conducted keeping bio-safety concerns in mind. The Centre has so far permitted commercial cultivation of Bt cotton but imposed moratorium on commercial release of Bt brinjal in February 2010 due to bio-safety concerns aired by green activists. While recalling how India transformed from ship-to-mouth situation due to the Green Revolution, Swaminathan said despite achieving self-sufficiency in foodgrains production, hunger is still prevalent in the country. The country is facing three kinds of problems -- calorie deficiency, protein deficiency and micro-nutrient deficiency, he said, and emphasised the need to take concrete steps to address these concerns. Appreciating the right to food approach adopted under the National Food Security Act (NFSA), Swaminathan said, "If the food security law is implemented properly, hunger can be addressed to a great extent in the country." He thanked the farming community for converting a small agriculture programme launched in 1960s into a mass movement, bringing in the Green Revolution.
Cancer spread process revealed

The Telegraph
December 16, 2015

Research led by an Indian scientist in the US has revealed a mechanism previously unknown to science that drives the lethal spread of cancer cells from their primary sites to other tissues. The experimental work shows how cancer cells hijack normal cells to drive the process called metastasis - the spread of cancer from one part of the body to other parts - which accounts for over 90 per cent of cancer-related deaths. The observations show that cancer cells construct tiny "molecular nano-bridges" to make connections with and take over the genetic machinery of normal cells and use them to slip into the bloodstream, a key step in metastasis. "We’re seeing cancer cells hijacking normal cells to spread through metastasis - this is the first time something like this has ever been observed," said Shiladitya Sengupta, an Assistant Professor at the Harvard Medical School Brigham Women's Hospital, Boston, who led the study.

The findings are expected to pave the way to new strategies to block metastasis, a cascade of events in which the cancer cells invade blood vessels, float in the bloodstream, and spread out to form secondary cancer sites in distant tissues or organs. For breast cancer, the most common sites of metastasis are the brain, liver, lungs and bone. Sengupta and his colleagues who used powerful microscopes to examine how metastatic breast cancer cells interact with endothelial cells that line the body’s blood vessels detected long thin tube-like structures extending from the cancer cells to healthy endothelial cells. Sengupta and his colleagues have described their findings in a paper published in the journal Nature Communications.

The researchers hypothesised that the cancer cells use these structures, or nano-scale bridges, to transfer genetic material called micro-RNAs into the endothelial cells - and confirmed this by detecting two micro-RNAs implicated in metastasis in transformed endothelial cells. "The cancer cells inject micro-RNAs through the nano-scale structures, turning normal cells into pathological cells that facilitate metastasis," said Sengupta, who studied biology and pharmacology at the All India Institute of Medical Sciences, New Delhi, before moving to the University of Cambridge and the US. For metastasis, the cancer cell transforms healthy endothelial cells, creating gaps in the lining of the blood vessels, he said. The gaps allow cancer cells to move into the bloodstream. The researchers then used chemical compounds to prevent the formation of the nano-scale bridges, thus disrupting the channels of communication between the cancer cells and the healthy endothelial cells. They found that a chemotherapeutic drug called docetaxel - which is used to treat metastatic cancer - decreased the number of such bridges. In mice treated with chemicals that can prevent bridges, the scientists observed a decrease in the metastatic tumour burden. "We have shown that if you target the building blocks of the nano-scale bridges, you can obstruct metastasis," Sengupta said. This work provides insights into cell-to-cell communication in tumours, Elazaer Edelman, Professor Of Health Science And Technology at the Massachusetts Institute of Technology, said in a media release issued by the Brigham Women's Hospital. "(This) will shed new light on cancer as a disease," he said, adding that knowledge of mechanisms underlying metastasis could also lead to innovative therapies.

New approach toward a broad spectrum malaria vaccine

Biocompare
October 21, 2015

In a recent breakthrough to combat malaria, a collaboration of Indian and American scientists have identified a malarial parasite protein that can be used to develop antibodies when displayed on novel
vaccinate mice. Interestingly, a subsequent challenge with a lethal strain of mouse malaria parasite in these vaccinated animals showed considerable protection against malaria. Says Prof. DasSarma, PhD, a Professor of Microbiology and Immunology at the school, "GVNPs offer a designer platform for vaccines and this work is a significant step forward towards a new malaria vaccine." This study is a significant advance in the field, since most other vaccine candidate molecules tested so far confer protection against only a single species of parasite, due to the species and strain specific nature of these molecules. "The small segment of five amino acids that forms a protective epitope is present in all human malaria causing species of Plasmodium and hence, antibodies directed against it are likely to protect against all species of the parasite", says Sneha Dutta, a graduate student at TIFR who conducted these experiments. Efforts are now focused at developing this into an effective vaccine against malaria.

UNL, Johns Hopkins researchers identify DNA of algae virus in humans

Office of University Communications University of Nebraska
October 27, 2015

The DNA of a virus once thought confined to the cells of algae may in fact invade the biological kingdom of mice and men, according to a new study from researchers at Johns Hopkins University in Baltimore and the University of Nebraska-Lincoln. The researchers, whose paper appeared Oct. 27 in Proceedings of the National Academy of Science, found DNA resembling that of an algae-native chlorovirus while taking throat swabs from healthy subjects during a study on cognitive functioning. The discovery represents the first documented case of chlorovirus gene sequences in the human throat cavity, the researchers reported. "Chloroviruses are worldwide," said senior author James Van Etten, William Allington Distinguished Professor of Plant Pathology and a co-director of the Nebraska Center for Virology at UNL, who helped...
bacteria in throat swabs, but the way those studies were done meant that they could have easily missed the ones that we work with," Van Etten said. "Viruses are almost always thought to be very small. Researchers filter out other components when they're identifying viruses, and chloroviruses are so big that they would've been caught in those filters." While emphasizing the need to further study the cognitive correlations of ATCV-1, Van Etten also indicated that the team is very interested in determining whether the chlorovirus can replicate in human and animal cells. The research was funded by the Stanley Medical Research Institute, the National Science Foundation and the National Center for Research Resources, part of the National Institutes of Health, under grant No. P20-RR15635.

Human liver cells successfully grown in lab

Deccan chronicle
November 27, 2015

Scientists have successfully grown human liver cells in the laboratory using a new technique that allows the cells to proliferate rapidly without losing their unique metabolic function. This groundbreaking development could help advance a variety of liver-related research and applications, from studying drug toxicity to creating bio-artificial liver support for patients awaiting transplantations. Human hepatocytes - cells that comprise 85 per cent of the liver - are routinely used by the pharmaceutical industry for study of hepatotoxicity, drug clearance and drug-drug interactions. They also have clinical applications in cell therapy to correct genetic defects, reverse cirrhosis, or support patients with a liver-assist device. However, while the human liver can rapidly regenerate in vivo, this capability to proliferate is rapidly lost when human cells are removed from the body. Past attempts to expand human hepatocytes in the laboratory resulted in immortalised cancer cells with little metabolic function. To address this problem, Yaakov Nahmias, from the
Wisconsin-Madison have created a specialised nerve cell that makes serotonin, a signalling chemical with a broad role in the brain. Serotonin affects emotions, sleep, anxiety, depression, appetite, pulse and breathing. It also plays a role in serious psychiatric conditions like schizophrenia, bipolar disorder and depression. "Serotonin essentially modulates every aspect of brain function, including movement," said one of the researchers Su-Chun Zhang. A small number of neurons localised on one structure at the back of the brain are responsible for making this chemical. Serotonin exerts its influence because the neurons that make it project to almost every part of the brain, the researchers said. The study began with two types of stem cells: one derived from embryos, the other from adult cells. Serotonin neurons form before birth, the researchers had to recreate the chemical environment found in the developing brain in the uterus, Zhang said. Because the neurons can be generated from induced pluripotent stem cells, which can be produced from a patient's skin cells, "these could be useful for finding treatments for psychiatric disorders like depression, where we often see quite variable responses to drugs," study first author Jianfeng Lu said. "By identifying individual differences, this could be a step toward personalised medicine," Lu noted. The findings were reported in the journal Nature Biotechnology.

Anti-cancer molecules ‘discovered’ by varsity in MP
The Hindu
December 7, 2015

In a major breakthrough in cancer treatment which is inspired by the all-time tested properties of turmeric, a state-run varsity in Bhopal claimed to have discovered anti-cancer molecules which will bring a revolution in fighting the dreaded disease in an effective manner. Bhopal-based Rajiv Gandhi Proudyogiki Vishwavidyalaya (RGPV) also announced that it has applied for a US patent of the discovery of the new anti-cancer molecules code named “CTR-20,” Vice Chancellor, Hebrew University of Jerusalem, partnered with leading scientists at upcyte technologies GmbH in Germany to develop a new approach to rapidly expand the number of human liver cells in the laboratory without losing their unique metabolic function. The researchers demonstrated that weak expression of Human Papilloma Virus (HPV) E6 and E7 proteins released hepatocytes from cell-cycle arrest and allowed them to proliferate in response to Oncostatin M (OSM), a member of the interleukin 6 (IL-6) superfamily that is involved in liver regeneration. The researchers carefully selected colonies of human hepatocytes that only proliferate in response to OSM. Stimulation with OSM caused cell proliferation, with doubling time of 33 to 49 hours. Removal of OSM caused growth arrest and hepatic differentiation within 4 days, generating highly functional cells. The method, called the upcyte process, allows expanding human hepatocytes for 35 population doubling. "Its strength lies in our ability to generate liver cells from multiple donors, enabling the study of patient-to-patient variability and idiosyncratic toxicity," said Joris Braspenning, who led the German group. The team generated hepatocyte lines from diverse ethnic backgrounds that could be serially passaged, while maintaining CYP450 activity, epithelial polarisation, and protein expression at the same level as primary human hepatocytes. Importantly, the proliferating hepatocytes showed identical toxicology response to primary human hepatocytes across 23 different drugs. The study was published in the journal.

Crucial brain chemical made from human stem cells
Zee News, December 16, 2015

Using stem cells, researchers at the University of Wisconsin-Madison have created a specialised nerve cell that makes serotonin, a signalling chemical with a broad role in the brain. Serotonin affects emotions, sleep, anxiety, depression, appetite, pulse and breathing. It also plays a role in serious psychiatric conditions like schizophrenia, bipolar disorder and depression. "Serotonin essentially modulates every aspect of brain function, including movement," said one of the researchers Su-Chun Zhang. A small number of neurons localised on one structure at the back of the brain are responsible for making this chemical. Serotonin exerts its influence because the neurons that make it project to almost every part of the brain, the researchers said. The study began with two types of stem cells: one derived from embryos, the other from adult cells. Serotonin neurons form before birth, the researchers had to recreate the chemical environment found in the developing brain in the uterus, Zhang said. Because the neurons can be generated from induced pluripotent stem cells, which can be produced from a patient's skin cells, "these could be useful for finding treatments for psychiatric disorders like depression, where we often see quite variable responses to drugs," study first author Jianfeng Lu said. "By identifying individual differences, this could be a step toward personalised medicine," Lu noted. The findings were reported in the journal Nature Biotechnology.
Professor Piyush Trivedi and his doctoral student Dr. C. Karthikeyan said in Bhopal. “Inspired by the healing properties of turmeric, which is available in every household and considered as an effective antiseptic and given almost to everyone for treating various ailments, we have studied it deeply for almost 10 long years and discovered a molecule based on our findings which has magical effects on treating cancer during pre-clinical trials,” Prof. Trivedi said. “It is novel and unique in a sense that unlike other cancer drugs, that have major side-effects especially when one undergoes chemotherapy. This molecule targets and destroys only cancerous cells and caused no damage to other vital cells of the body,” the Vice Chancellor of state’s only government Technological University said. “The research was carried out in collaboration with Canada-based Advanced Medical Research Institute’s Dr. Hyoun Lee’s team and an US provisional patent application has been officially filed to protect intellectual property rights,” Mr. Trivedi, who is a pharmacist by profession, said. “The molecules code named CTR-17 and CTR-20 elicits anticancer activity through a mechanism which involves obstruction of cancer cell division by inhibition of tubulin, a protein which is important for many important cellular functions, including chromosome segregation during cell division, intracellular transport, development and maintenance of cell shape, cell motility and distribution of molecules on cell membranes,” explained Mr. Karthikeyan, who was associated with the research since the beginning. “Besides these two, we have also discovered 22 other molecules and their pre-clinical trials has also produced very encouraging results and would prove a boon to cancer patients,” Mr. Trivedi said. The Vice Chancellor said that RGPV is the only university in the country that has carried out research of this kind which will transform the lives of those suffering from cancer. He informed that after pre-clinical trial which too were conducted in Canada, the stage was set for the clinical trials of the discovered molecule on animals (mice) at Canada only. “Studies in the lab have also showed that CTR-17 and CTR-20 increased the life span of animals affected with tumour manifold by including tumour regression in mice models without showing any long term adverse effects, especially less toxicity.” Furthermore, the molecules also showed strong synergistic effects in combination with paclitaxel (an anti-cancer drug in clinical use) on multidrug-resistant cells. “The overall data generated shows that CTS compounds tested alone or in combination with paclitaxel, possess strong anti-tumour activity without notable ill-effects to animals observed warranting clinical trials to establish its safety and efficacy in humans,” Trivedi claimed based on his findings. “This is a significant discovery especially in the present context when cancer has become worlds dreaded killer disease accounting for 8.2 million deaths (around 13 per cent of all deaths) in 2012 as per the World Cancer Report and scientists embattling cancer are on the lookout for newer effective and safer drugs for anticancer therapy,” he added.

CSIR-CCMB scientists prove scientific basis for ancient ayurvedic medicine through genome analysis

Pharma Biz
November 09, 2015

Researchers at Center for Scientific and Industrial Research-Center for Cellular and Molecular Biology (CSIR-CCMB) in Hyderabad have found scientific evidences for the ancient ayurvedic medicine, through genome analysis. Practice of ayurvedic medicine is coming since ages in India, but its practice has been sidelined with the advent of advanced allopathic system of medicine. Lack of research and constant initiatives to find new drugs in Ayurveda has left it behind. Now with CCMB taking a lead and initiating a successful research correlating the Ayurvedic Prakriti with genetic diversity,
For the study, the researchers recruited 3,416 normal healthy males aged between 20 and 40 years. Ayurvedic physicians screened them, and they were also screened by software called AyuSoft, developed by C-DAC. Their blood samples were collected, isolation of DNA and genomic studies were carried out.

there is new hope that the ayurvedic system of medicine will flourish globally in the coming days.

“For the first time we could successfully link India’s ancient wisdom with modern sciences. Our scientists were able to discover that the ‘dosha prakriti’ or phenotypic classification of traditional Indian medicine has indeed a genetic basis,” said Ch. Mohan Rao, Director of CCMB. Explaining further Mohan Rao said CCMB research team took up the challenge to find out the correlation between Ayurvedic Prakriti classification and genetic diversity. “Interestingly, although we had individuals from different ancestries and communities, they all got classified into these three classifications. This was a sign that there was real science behind this ayurvedic classification,” he said. While the Chinese traditional medicines has got its worldwide recognition with a noble price, the Indian ayurvedic medicine is still lagging behind due to no scientific proof. But with this breakthrough development from CCMB this new discovery will be beneficial to both ayurvedic and allopathic practitioners. This work will eventually lead to establishing Ayurveda on a sound footing along with modern medicine. Ayurveda is an ancient medical system. Its documented history dates back to 1,500 BC and had been in practice for a few thousand years much earlier. Ayurvedic physicians believe that there are three doshas - Vata (related to space and air), Pitta (fire and water) and Kapha (water and earth). Each individual would have different levels of these doshas, hence the diversities. “Whether such phenotypic classification has any molecular basis has been a matter of debate. A few groups had found some correlation when they looked at one or two specific genes. However, the association with Prakriti classification was lacking,” Rao said.
Connecting the dots

With increasing pressure to reduce healthcare costs globally, emerging markets particularly India is gaining further prominence with its scientific and tech talent pool, contract research and manufacturing activities, process reengineering and innovative R&D capabilities serving as key enablers. Under this backdrop, the thirteenth edition of BioAsia will be organized with the theme of Leveraging India to Succeed globally and shall focus on connecting the dots to build stakeholder consensus and draw a distinct road-map to propel the sector growth.