



NEWS ALERT

Forum for Indian Science Diplomacy

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GLOBAL

[Doubling sorghum grain yield to improve food supply](#)

Plant scientists at Cold Spring Harbor Laboratory (CSHL) and USDA's Agricultural Research Service (ARS), have shown that doubling the yield of sorghum is possible. They have identified two genes, manipulating of whom can result in increased yield. Manipulating either of the two genes, MSD1, MSD2 results in increase in seed and flower production. While it is expected that this discovery may be relevant for increasing yields in other crops like maize and rice, only further research can tell us whether these can be translated in to expected increase in yields.

[Research reveals that Earth Orbits the Sun](#)

A neural network inspired by human brain and developed by scientists at ETH, Zurich has discovered that earth orbits the Sun. This neural network, was given stimulated data about movements of Mars and Sun, and it came up with formulae for trajectory of Mars. It is expected that this network and other similar ones will go a long way in helping astronomers

and physicists in unravelling the unexplained phenomenon and puzzles in quantum physics and astronomy.

Compensating for Traditional Knowledge: A Model from South Africa

After nine years of protracted negotiations South Africa's rooibos tea industry has entered into an agreement that will facilitate compensating the Indigenous San and Khoi communities for their claim that rooibos tea is based on their traditional knowledge. Although the industry was wary of it and tries to resist such claims, finally it agreed to compensate. This combined with the code of ethics will pave way for treating the indigenous communities as equals and for sharing the benefits from accessing their knowledge and genetic resources. The South African government told the industry that 1.5% of the 'farm gate price', paid by the industry for unprocessed rooibos will be payable to communities.

Novel Method to expedite Drug Discovery

A team at the University of Maryland, Baltimore County (UMBC) has have come up with brief-case sized laboratories to make drug discovery affordable and simplistic. The briefcase consists of a series of interconnected, fist-sized black boxes, filled with vials of the size of a paper clip, fed by syringes and joined by clear miniature size plastic tubes. With flow of electricity, some freeze-dried cell parts and a pinch of DNA, the portable devices allow anyone to start making sophisticated drugs in few dollars. The system is called Bio-MOD (Biologic Medications on Demand), that has the potential to transform the drug discovery pattern. Such attempts are also being undertaken by teams at the Massachusetts Institute of Technology (MIT) in Cambridge; Virginia Commonwealth University (VCU) in Richmond; and hospitals in Latin America and Europe, to produce on-demand pharmaceuticals. Their prototype systems represent a complete reinvention of drug manufacturing.

INDIA

Germany-India boost cooperation in Science and Technology

German Chancellor Merkel and Prime Minister Modi emphasized on driving the digital transformation through innovation and frontier technologies, and, advocated sustainable economic growth and cooperation on tackling climate change. It was agreed that the two countries will work together on AI technologies while affirming the commitment to Digital Partnership. In the collaboration on the next generation technologies, importance will be given to developing IoT and AI solutions for societal benefits. Both sides stressed the importance of responsible and human centric development in and use of artificial intelligence, and applauded the Global Partnership on AI (GPAI). Both leaders expressed their appreciation for research partnership within the Indo-German Science and Technology Centre, IGSTC, which will complete a decade in 2020. Collaborating in the start up ecosystems and strengthening the current co-operation in this sector was another highlight of this visit.

Tata Power to provide electricity to 25 million people in India

Tata Power Company will work with with the Rockefeller Foundation to establish TP Renewable Microgrid as an initiative, to set up 10,000 microgrids for providing to provide power to 5 million homes across the country. This will supplement the ongoing efforts in rural electrification by harnessing the renewable microgrids to serve households and businesses .TP Renewable Microgrid, to be managed by Tata Power, strives to provide solar power to 25 million people in a decade. The 10,000 microgrids set up over the next seven years will provide clean power and reduce energy poverty significantly. It is expected that this will be a relevant global model for providing access to electricity to more than 800 million people. In September 2019, The Rockefeller Foundation launched the Global Commission to End Energy Poverty (GCEEP) with the objective tackling energy poverty globally. Micogrids are a key component of its strategy to address energy poverty.

India's first global Mega Science Exhibition 'Vigyan Samagam'

India's first-ever global Mega-Science exhibition, 'Vigyan Samagam', was inaugurated at the Science City in Kolkata on 4th November. This multi-venue Science Exhibition, is open for public in Kolkata till December 31, 2019. It was earlier hosted in Mumbai and Bengaluru. The Minister spoke of the importance of Mega Science Projects as they give rise to newer technologies which are transforming day to day lives of billions of people. He cited World Wide Web, advanced imaging technologies used in modern photography and medical imaging, accelerators used in cancer therapy today, etc. as fruits of mega science projects. It was highlighted that such projects are transformational as they will help in building high-tech manufacturing capabilities in the country and accelerate promotion of advanced technologies. After Kolkata, Vigyan Samagam will be hosted in New Delhi, at the National Science Centre from 21st January, 2020 and will close on 20th March, 2020. After March 20th it will be converted in to a permanent exhibition at New Delhi.

IN BRIEF

Synthetic Bacteriophages with programmable specificity

Researchers from the Institute of Food, Nutrition and Health (IFNH) at ETH Zurich have genetically reprogrammed Bacteriophages ("phages) to produce synthetic phages that recognize and attack a broader range of bacterial strains beyond their natural host. On the bottoms of phages' tails are specialized receptor binding proteins that recognize specific receptors, on the exposed cell walls of a target bacterium. The researchers assembled new receptor binding proteins by fitting together protein components derived from different phages to provide different host specificities. Finally, the researchers genetically modified Listeria phages with their designer receptor binding proteins, resulting in phages that recognize and kill new strains of the target bacterium. Although these designer phages attack different new hosts, they all share the same genome, except for the gene encoding their receptor binding proteins. A mixture of such phage variants could now be used to treat patients. In terms of therapeutic applications, the synthetic phages can be used as diagnostic markers of specific molecular structures, such as for detecting pathogenic strains among a mixed bacterial population. A few months ago, a case was reported in which a 15-year-old suffering from cystic fibrosis was administered phages. The treatment has been successful in healing a severe infection caused by mycobacteria.

RESOURCES AND EVENTS

UNIDO General Conference adopts Abu Dhabi declaration

The 18th Session of the United Nations Industrial Development Organisation (UNIDO) General Conference held in Abu Dhabi gave importance to gender equality, development of clean technology, inclusive industrialisation and issues in development in Arab world. It adopted the Abu Dhabi Declaration, calling upon the private sector to form a coalition for advancing inclusive and sustainable industrial development. The Declaration formulates a roadmap for establishing a global alliance of private sector guided by a common vision of making industrialisation more inclusive and sustainable. The Global Manufacturing and Industrialisation Summit (GMIS), a joint UNIDO-UAE initiative that has started more than 100 partnerships with the private sector and has resulted in cutting-edge technological initiatives is an inspiration for this Declaration.

MOP 31 on sustainable cold chain and technology flows

India's Cooling Action Plan and efforts to increase farmers' income by improving and investing cold chains were highlighted in the 31st Meeting of the Parties to the Montreal Protocol (MOP 31), held from 4-8 November in Rome, Italy. In the meeting the role that sustainable cold chains play in price stabilization; food security; enhanced profitability; more secure livelihoods; social and economic development gains; fair and just sustainability transitions; SDG attainment; research, development and innovation; synergistic action; and restoration of degraded lands. Parties were also invited to sign the Rome Declaration on the Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Management. On 8th November, the Rome Declaration has been signed by 76

countries, and is open for signature up until the start of MOP 32 in November 2020. In the Declaration, the Ministers of the 76 countries stress the importance of pursuing national action and international cooperation to promote cold chain development, including by using sustainable and environmentally friendly refrigeration to reduce food loss. Developing states requested the Multilateral-Fund (MLF) support greater cooperation and capacity building in countries facing availability limitations or higher costs in implementing high-efficiency technologies. The MOP requested for a report for MOP32 that addresses any new developments with respect to best practices, availability, accessibility, and cost of energy-efficient technologies in the Refrigeration and Air Conditioning sector in support of the Kigali Amendment.

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