



Current Affairs - September 2017 to February 2018

Month Type



- ▶ [144 Current Affairs were found in Last Six Months for Type - Science and Technology.](#)

Science

- ▶ 2 new ant species *Tetramorium krishnani* and *Tetramorium jarawa* discovered in islands of Andaman, named after late scientist K.S. Krishnan of NCBS, and Jarawas – indigenous people of Andaman.
- ▶ Government launched Noxeno, a nasal foreign body removal device developed by start-up InnAccel Technologies, under Biodesign program. Noxeno is first dedicated tool for anterior nasal foreign body (NFB) removal that allows doctors in any setting to quickly and safely remove objects that people (mostly children aged 2 to 10 years) put into their noses.
- ▶ 5 students from Warangal (Telangana) selected to take part in 5th annual NASA Human Exploration Rover Challenge to be held in April 2018 in USA.
- ▶ A long-lost NASA satellite - *Imager for Magnetopause-to-Aurora Global Exploration (IMAGE)* has been spotted back.
 - ▶ Engineers from NASA's Goddard Space Flight Center used NASA's Deep Space Network which consists of a series of ground-based radio telescopes to study signals, only to discover that these signals were from IMAGE satellite.
 - ▶ IMAGE satellite was launched in March 2000, and exceeded its initial 2 year mission by operating through 2005. NASA lost contact with It in December 2005.
- ▶ A new LIGO (Laser Interferometer Gravitational-Wave Observatory) gravitational wave detector will be built in India by 2025 (world's 3rd after 2 in USA).
 - ▶ In 2016, LIGO detectors discovered gravitational waves produced by two giant merging blackholes. LIGO detector in India will help to pinpoint origin of gravitational waves that are detected in future.
- ▶ A new endangered flowering plant species named 'Primula Zhui' has been discovered by scientists in Yunnan Province of China, known in Chinese as Zhu Hua Baochun.
- ▶ A new research at Bhopal's Indian Institute of Science Education and Research (IIS) has proved D - 29 virus as capable of destroying cancer cells. The research is led by Scientist Soumya Kamilla. Now challenge is to transmit this virus to cancerous cells in body. Upon success in this, the method can be much more successful than Chemotherapy in eliminating cancer.
- ▶ A new species of non-venomous aquatic snake named *Aquatic Rhabdops* has been described as new species from northern Western Ghats in Maharashtra, Goa and North Karnataka. Earlier this species was considered as variant of Olive Forest Snake, first described in 1863.
- ▶ A new species of orang-utan named *Pongo tapanuliensis* identified in North Sumatra. It is most endangered great ape in world with just 800 individuals left.
- ▶ According to a new study by Swedish scientists, small molecules that specifically restrain a selenium-containing enzyme in the human body may become an important tool to fight cancer. Researchers at Karolinska Institute (Sweden) treated cancer in mice with these molecules and observed rapid tumor-killing effects.
 - ▶ Selenium is a chemical element that is an essential micronutrient. A selenium-containing enzyme, called TrxR1, can be used to support growth of various cells and protect them from oxidative stress (*imbalance between production of free radicals, which are highly reactive with other molecules, and body's ability to counteract or repair resulting damage*).
- ▶ According to new NASA study, our solar system's Planet Pluto may have liquid water oceans beneath their surface, as heat generated by gravitational pull of moons formed from massive collisions could extend the lifetimes of liquid water oceans beneath its surface.
- ▶ According to researchers from University of Southampton (UK), extreme global warming event named Palaeocene-Eocene Thermal Maximum (PETM) that occurred 56 million years ago was driven by massive CO₂ emissions from volcanoes during formation of North Atlantic Ocean.

- ▶ This caused doubling of CO₂ in less than 25 thousand years because of CO₂ emissions from volcanoes. PETM was most rapid and extreme natural global warming event of last 66 million years and lasted for around 150 thousand years. It increased global temperatures by at least 5 degrees Celsius.
13. ▶ According to study based on data from India's Chandrayaan-1 mission and NASA's Lunar Reconnaissance Orbiter (LRO), Moon's water may be widely distributed across its surface and not confined to particular region. It contradicts earlier studies that suggested that more water was detected at Moon's polar latitudes.
- ▶ Researchers after analyzing data from Moon Mineralogy Mapper spectrometer onboard Chandrayaan-1 spacecraft, suggested that water may be present primarily as OH, a more reactive form of normal water (H₂O). OH also called hydroxyl does not stay in its form for long, and attaches itself chemically.
14. ▶ Acer launched *Acer Swift 7*, that claims to be the world's thinnest laptop, priced at \$1,699. It has thickness of 8.98mm and is powered by Intel Core i7 processor.
15. ▶ As per Massachusetts Institute of Technology (USA)'s study titled *Thresholds of catastrophe in the Earth System*, Earth's sixth mass extinction may become a reality by 2100 due to increasing carbon pressure on oceans.
- ▶ In past 540 million years, Earth has seen 5 mass extinction events. By 2100, about 310 gigatons of carbon will have been added to oceans, a potential 'tipping point' for ecological disaster.
16. ▶ As per a study by University of Maryland (USA), India is overtaking China as the World's largest emitter of Anthropogenic Sulphur Dioxide (SO₂). Sulphur dioxide causes acid rain, haze and many health-related problems.
- ▶ India's emissions of SO₂ pollutant increased 50 % since 2007 while China's fell by 75 % (owing to excellent emission control measures undertaken by China).
17. ▶ As per new study at University of Colorado (USA) based on 25 years of satellite data, It is found that global sea level rise rate is accelerating a little every year.
- ▶ Sea level rate is increasing by about 0.08 millimeters per year (mm/year). It means annual rate of sea level will rise to 10 mm/year by 2100, mainly driven by rapid melting in Antarctica and Greenland.
- ▶ If oceans keep on to growing at this pace, sea level will rise 65cm by 2100, causing trouble for several coastal cities.
18. ▶ Astronomers discovered a 2 Sun-like star system around 350 light-years away that consumed rocky equivalent of 15 Earths, named *Kronos* (after child-eating Titan of Greek mythology).
19. ▶ Australian Researchers discovered a new water-adapted species of spiders named 'Desis bobmarleyi' in Queensland, named after noted singer and songwriter Bob Marley.
20. ▶ Australian scientists of University of New South Wales (UNSW) discovered a new species of marsupial lion which has been extinct for at least 19 million years. Named *Wakaleo schouteni*, it was a predator about the size of a border collie dog.
21. ▶ Bengaluru-based biotech startup *Bugworks Research* became India's and Asia's first to receive international CARB-X (Combating Antibiotic Resistant Bacteria Biopharmaceutical Accelerator) grant for its antibiotic research and development.
- ▶ CARB-X is an international partnership set up in 2016 to focus on innovations to improve diagnosis and treatment of drug-resistant infections. It grew out of Barack Obama's 2015 Combating Antibiotic Resistant Bacteria (CARB) initiative.
22. ▶ Botanical Survey of India (BSI) scientists discovered two new species of Ginger - *Hedychium chingmeianum* (Nagaland) and *Caulokaempferia dinabandhuensis* (Manipur).
23. ▶ Botanists discovered new species of wild banana named *Musa paramjitiana* in Andaman and Nicobar Islands, named in honour of Paramjit Singh, director of Botanical Survey of India (BSI).
24. ▶ Breakthrough Listen project detected 15 Fast Radio Bursts (FRBs) coming from a dwarf galaxy about 3 million light years away from earth, with help of Green Bank Telescope (GBT) in West Virginia.
- ▶ FRB is brief, bright pulse of radio emission from distant galaxies. It was first detected in 2007 with help of Parkes Telescope in Australia.
25. ▶ CSIR - National Institute of Oceanography Goa announced discovery of methane gas flares and active cold seeps from seabed in Krishna Godavari basin in Bay of Bengal, distributed over water depth of 900 - 1900 metres. Gas hydrates are a potential source of alternate energy.
26. ▶ CSIR scientists developed an ultra-thin wireless device that mimics plant leaves to produce hydrogen fuel using water and sunlight, paving way for clean energy for powering eco-friendly cars in future.
- ▶ At present, hydrogen is produced from fossil fuels by steam reforming. In this process large amount of CO₂ is emitted. This new green method of generating Hydrogen from Water may be a great reform in coming times.
- ▶ When visible light strikes semiconductors, electrons move in one direction and produce electric current. The current almost instantaneously splits water into hydrogen making it one of cleanest forms of fuel as its main byproduct is water.

27. ▶ California Institute of Technology, USA (CALTECH) scientists made world's smallest recreation of Leonardo da Vinci's Mona Lisa, through a technique dubbed as *DNA origami*. Scientists folded DNA into desired self-assembling structures using 64 tiles, which were 100 nanometers wide.
28. ▶ Cambridge University (UK) researchers discovered that oldest recorded solar eclipse occurred on 30 October 1207 BC, around 3200 years ago. It helped historians to date Egyptian pharaohs, monarchs of ancient Egypt. Solar eclipses are often used as a fixed point to date events in the ancient world.
29. ▶ China began test runs of world's first track-less train in Zhuzhou city, that runs on virtual track and is being considered *World's First smart train*. This train could travel at the speed of 70 kmph and is called Autonomous Rail Transit (ART).
30. ▶ China launched world's largest human genome research project to document genetic makeup of 1 lakh people, to detect genetic links between health and sickness and use that information to generate precision medicines for future.
31. ▶ China tested its first photovoltaic (solar) highway in Shandong province, becoming 2nd country (after France) to construct a photovoltaic highway.
 - ▶ China's photovoltaic highway is constructed using solar panels with thin sheet of transparent concrete on top of them.
 - ▶ The photovoltaic panels of the highway are built to transfer energy to electric vehicles passing on top of them.
 - ▶ Tested 1 KM segment of solar highway can generate 817.2 KW of electricity and can generate 1 million KW hours of electricity yearly.
32. ▶ China will build a Martian village (simulating environmental conditions on Mars) in Qinghai Province, in red rock area of the Qaidam basin in western Qinghai.
33. ▶ China's Three Gorges Corp. started building world's biggest floating solar power plant in Anhui Province, expected to be launched by May 2018.
34. ▶ China's AG600 (also known as Kunlong), world's largest amphibious aircraft took off its first flight from Zhuhai City. It has huge wingspan of 38.8 metres and can land and take off from water.
35. ▶ Chinese scientists for first time have successfully cloned two identical long-tailed macaques (monkeys), named Zhong Zhong and Hua Hua using same technique that produced Dolly sheep two decades ago. This makes them world's first primates (*order of mammals that includes monkeys, apes and humans*) to be cloned from non-embryonic cell.
 - ▶ These identical long-tailed macaques were cloned using process called somatic cell nuclear transfer (SCNT), that involves transferring the nucleus of cell, which includes its DNA, into egg whose nucleus is removed.
 - ▶ Similar work in primates earlier, had always failed, leading some scientists to wonder if primates were resistant.
36. ▶ Columbia University (USA) researchers converted a bacterial immune system into world's smallest data recorder, by modifying an ordinary laboratory strain of human gut microbe *Escherichia coli*, using CRISPR gene-editing method. It enabled bacteria to record their interactions with environment and also time-stamp the events. It has several possible applications such as disease diagnosis, environmental monitoring and basic studies in ecology and microbiology.
37. ▶ Department of Science and Technology (DST) will fund a project to develop quantum computers in order to tap into next big advance in computing technology.
 - ▶ Quantum computer uses principles of quantum physics to increase computational power beyond attainable limits of traditional computer. It employs complex principles of quantum mechanics to store information in 'qubits' (quantum bit) instead of the typical binary 'bits' of 1 and 0.
38. ▶ Food and Drug Administration (FDA) of USA approved *Abilify MyCite* as first drug in USA with a digital ingestion tracking system, to ensure that patients with mental illness take the medicine prescribed for them.
39. ▶ Geologists for first time discovered 152 million-year-old fossil of Ichthyosaur, an extinct marine reptile in Kutch desert region of Gujarat. The specimen belongs to Ophthalmosauridae family of ichthyosaurs that lived in oceans between 165 and 90 million years ago.
40. ▶ H-BOTS, Hyderabad-based artificial intelligence (AI) and machine learning start-up unveiled a prototype of a smart policing robot, which weighs 43 kg and is made of nylon plastic. H-BOTS is planning to produce 700 such units a year by 2020.
41. ▶ Health-tech startup mCURA launched *Smart OPD* as India's first integrated mobility platform that reduces waiting time in counters and provides e-prescriptions. It helps patients to escape long queues at admission and billing counters, labs, pharmacies and hospitals.
42. ▶ Hyderabad based Centre for Cellular and Molecular Biology (CCMB) and Indian Institute of Rice Research (IIRR) developed Improved Samba Masuri (ISM) variety rice with low Glycemic Index (50.99 against normal value of 53 - 70).
 - ▶ Rice with low GI is considered suitable for people with diabetics and it results in slow release of glucose into blood.
43. ▶ ISRO's Mars Orbiter Mission (Mangalyaan) completed 3 years in Martian orbit, already having outlived its original lifespan. Mangalyaan was launched on board of PSLV C25 rocket on November 5, 2013 and entered Mars orbit on September 24, 2014.
44. ▶ India has been declared free from infective Trachoma which is a contagious bacterial infection of the eye, that causes inflamed granulation on inner surface of lids. It was stated in National Trachoma Survey Report 2014-17 released by Minister of Health and Family

Welfare J P Nadda.

45. ▶ India's First wave-powered navigational buoy developed by National Institute of Ocean Technology (NIOT), has been deployed at Ennore Kamarajar Port (Chennai) to guide ships in and out of ports. Buoy's ship guiding beacon is powered by wave energy while conventional ones use solar power.
- ▶ National Institute of Ocean Technology (NIOT) will also build India's first offshore desalination plant about 40km from Chennai coast, with capacity of 10 million litres water / day.
46. ▶ Indian Scientist Satish Tailor has developed a new thermal spray coating technology for use in gas turbine engine in spacecraft, called controlled segmented Yttria-Stabilised Zirconia (YSZ)-Plasma sprayed coating technology. It can reduce thermal spray coating cost by 50%.
- ▶ Current costly techniques such as SPS or EB-PVD develop cracks through very expensive processes and are not controllable, while YSZ develops vertical cracks (segmentation) in coating, beneficial for gas turbine engine application used in spacecraft. It can be industrially adopted to make a strain-tolerant coating more economical.
47. ▶ Indian Space Research Organisation (ISRO) launched 31 satellites along with Cartosat-2 surveillance satellite (weighing total 1383 KG), onboard 42nd Polar Satellite Launch Vehicle (PSLV-C40) rocket.
- ▶ Among 31 satellites, 3 belong to India and rest 28 are of six other countries.
 - ▶ Cartosat-2 series Satellite weighs 710 KG, making it heaviest satellite that PSLV has carried till now. It will beam high-quality images for cartographic, urban and rural applications, coastal land use and utility management.
48. ▶ Indian Space Research Organisation (ISRO) will build igloos (referred to as lunar habitats) on Moon, by sending robots and 3D printers to Moon. It aims to help astronauts spend more time on moon.
49. ▶ Indian Space Research Organisation (ISRO) will launch Chandrayan-2 Mission in April 2018 as India's second lunar mission. It will cost approx INR 800 Crores.
- ▶ ISRO is also planning to launch India's second space observatory, AstroSat-2, to help observe distant planets, galaxies and other astronomical objects more clearly than from Earth. Currently, only USA, Japan, Russia, Europe and India have their own space observatories. AstroSat-1 was launched in September 2015 with life span of 5 years.
50. ▶ Indian Space Research Organization (ISRO) will set up a research centre in Guwahati (Assam) for exploring possibility of using geospatial technology and geographical information systems (GIS).
51. ▶ India's First mission to Sun will be launched in 2019, aiming to improve our understanding of dynamical processes of the sun and help resolve some outstanding questions in solar physics. It will be launched from Sriharikota in Andhra Pradesh on PSLV- XL launch vehicle.
- ▶ The mission will put 1500-kg heavy class Aditya-L1 satellite into halo orbit around Lagrangian point L1, a point between Sun and Earth.
52. ▶ India's fastest and first multi-petaflops (PF) supercomputer named Pratyush (meaning *Sun*) unveiled at Pune-based Indian Institute of Tropical Meteorology (IITM). It will enable better weather related forecasts including monsoon, cyclones, tsunamis, earthquakes, lightning etc.
- ▶ Pratyush has 6.8 PF computational power installed at two MoES Institutes. 4.0 Peta Flops HPC facility at IITM, Pune and 2.8 Peta Flops facility at NCMRWF, Noida.
 - ▶ Pratyush is fourth fastest supercomputer in world for weather and climate research, after supercomputers in Japan, US and UK.
 - ▶ It will enable mapping regions in India at resolution of 3 km and globe at 12 km.
 - ▶ Fastest Supercomputers in world -

Supercomputer	Peak speed (Rmax)	Location
TaihuLight (<i>Sumway</i>)	93.01 PFLOPS	China
Tianhe-2 (<i>NUDT</i>)	33.86 PFLOPS	China
Piz Daint (<i>Cray</i>)	19.59 PFLOPS	Switzerland
ZettaScaler (<i>Gyokou</i>)	17.14 PFLOPS	Japan
Titan (<i>Cray</i>)	17.59 PFLOPS	USA

53. ▶ India's multi-wavelength space telescope *AstroSat* accomplished difficult task of measuring X-ray polarisation. It did 18 month long study of Crab pulsar in Taurus Constellation and measured variations of polarisation as this highly magnetised object spins 30 times per second. This measurement puts up a strong challenge to prevailing theories of high energy X-ray emission from pulsars.
54. ▶ Indonesian scientists from Lambung Mangkurat University found world's smallest squirrel in Borneo rain forest, named *Bornean pigmy*. It is 73 mm long and weighs about 17 grams.
55. ▶ International Astronomical Union (IAU) named 2 mountain ranges on icy dwarf planet *Pluto* as Tenzing Montes and Hillary Montes, after Tenzing (Nepal) Norgay and Edmund Hillary (New Zealand) who were first mountaineers to reach summit of Mount Everest in 1953.


These are among 14 other names officially approved for naming 14 geographical features on Pluto.

56. ▶ International Conference of heads of Metrology Institutes held in Sevres (France) decided that measure of kilogram will no longer be pegged to cylinder. From 2019 onwards, it will be set by value of Planck constant in combination with definitions of meter and second.
 - ✎ Till now, kilogram is only unit of measures pegged to a real object. But cylinder's weight in kilogram fluctuates due to surface contamination with time, making it tricky to define its exact mass.
57. ▶ International Union for Conservation of Nature (IUCN) has downgraded conservation status of snow leopard from "endangered" to "vulnerable", that was continuing since 1972.
 - ✎ Species are *endangered* if they are fewer than 2,500 with high rate of decline. Vulnerable Species are those with population under 10,000 and declining at rate of 10% over 3 generations.
58. ▶ Japan Aerospace Exploration Agency (JAXA) launched world's smallest rocket with ability to put a tiny satellite into orbit. It carried a microsatellite TRICOM-1R, a three-unit CubeSat weighing about 3 kilograms.
59. ▶ Lakhs of migratory birds made their way to Chilika Lake (Odisha) after a long flight of thousands of miles, to wetlands of Nalabana Bird Sanctuary inside Chilika and Mangalajodi (Odisha).
 - ✎ During winters, migratory birds fly across continents from Caspian Sea, Baikal Lake and remote parts of Russia, Mongolia and Siberia and flock to marshy lands of Nalabana Bird Sanctuary inside Chilika Lake.
60. ▶ Mainstream space agencies in world proposed creation of a climate observatory to combine acquired data and share it with scientists around globe, during *One Planet Summit* in Paris (France).
61. ▶ NASA Stated That ozone hole that forms over Antarctica every year in September is smallest this year since 1988. It Declined gradually after reaching its extent on September 11.
62. ▶ NASA revealed that a mysterious world called *Planet Nine* does exist in solar system-
 - ✎ It might be lingering on icy outer edges of solar system hiding in dark, but stretching out orbits of distant bodies.
 - ✎ It is very distant and is 10 times mass of Earth and 20 times farther from sun than Neptune.
63. ▶ NASA tested a new technology that allows aircraft to fold their wings between zero and 70 degrees while in flight. Built from a shape memory alloy, it operates without a hydraulic system, reducing wing weight by up to 80%.
64. ▶ NASA will launch Parker Solar Probe in 2018 to explore sun's outer atmosphere, onboard Delta IV Heavy launch vehicle. It aims at Tracing how energy and heat move through solar corona and what accelerates solar wind as well as solar energetic particles.
65. ▶ NASA will launch SuperTIGER Balloon in Antarctica, to study heavy cosmic particles, collect information on cosmic rays that enter Earth's atmosphere every day.
 - ✎ SuperTIGER stands for Super Trans-Iron Galactic Element Recorder (SuperTIGER) and is balloon-borne instrument to study rare heavy nuclei, which hold clues about where and how cosmic rays attain speeds up to nearly the speed of light.
66. ▶ NASA's Hubble and Spitzer space telescope discovered *SPT0615-JD* as farthest known galaxy in universe so far (2,500 light-years away). It is a cluster of 500 million year-old stars. SPT0615-JD was found in Hubble's Reionization Lensing Cluster Survey (RELICS) and companion S-RELICS Spitzer programme.
67. ▶ NASA's \$3.9 bn Cassini spacecraft ended its 20-year-long journey after Plunging into Saturn's atmosphere. Cassini's mission to Saturn began in 1997, reaching it in 2004.
68. ▶ NASA's Solar Dynamics Observatory (SDO) captured images of 2 significant Solar Flares emitted by Sun, powerful bursts of radiation classified as X2.2 flare and 2nd is X9.3 flare.
 - ✎ X9.3 flare was the largest flare in the current solar cycle which began in December 2008 and heading towards 'Solar Minimum'.
 - ✎ Solar Minimum is such phase of the solar cycle when these eruptions on the sun are increasingly rare, but they can be intense.
69. ▶ NASA's asteroid-chasing spacecraft Osiris-Rex (*Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer*) successfully swung by Earth to put it on desired trajectory towards near earth asteroid Bennu using Earth's gravity.
 - ✎ OSIRIS-REx mission was launched in September 2016 for studying 101955 Bennu, a carbonaceous asteroid as NASA's first asteroid sampling mission.
70. ▶ NVIDIA unveiled world's first Artificial Intelligence (AI) computer designed to drive fully autonomous robotaxis, named Pegasus. It be available to NVIDIA automotive partners in the second half of 2018. It will help to create a new class of vehicles that can operate completely without a driver.
71. ▶ National Aeronautics and Space Administration (NASA) launched Joint Polar Satellite System-1 (JPSS-1) as first of 4 multi-day weather forecasts satellites.
 - ✎ JPSS-1 is joint venture between NASA and NOAA (National Oceanic and Atmospheric Administration). It will be renamed NOAA-20 when it reaches its final orbit. It is designed to monitor weather around world and help improve forecasts.


72. ▶ National Aeronautics and Space Administration (NASA) will soon launch two missions - GOLD (*Global-scale Observations of the Limb and Disk*) and ICON (*Ionospheric Connection Explorer*), to explore ionosphere (96 km above Earth's surface).
- ▶ ICON will be launched in low-Earth orbit (LEO) located at 560 km above Earth and GOLD will be launched in geostationary orbit over Western Hemisphere (about 35,398 km above earth).
 - ▶ It will help in full-disk view of ionosphere and upper atmosphere beneath it every half hour.
73. ▶ New species of blind fish "Schistura larketensis" has been discovered in East Jaintia Hills district of Meghalaya. The fish had lost its pigments and eye sight after living in darkness of the cave.
74. ▶ Oil and Natural Gas Corporation (ONGC) will introduce carbon dioxide (CO₂) injection technology in its Gandhar oil field in Gujarat, as first large scale CO₂-injected project in Asia. It aims to recover extra 20 million barrels of crude oil under enhanced oil recovery (EOR) programme.
- ▶ CO₂ injection technology is a proven concept in West, especially USA and Canada. Under it, CO₂ gas is injected with residual oil in ageing field in which total oil production has been declining. It reduces its viscosity and makes it easier to displace oil from rock pores.
75. ▶ Palaeontologists from University of Portsmouth (UK) discovered remains of humankind's oldest mammal ancestor — a tiny rat-like creature that lived 145 million years ago.
76. ▶ Paleontologists from Chinese Academy of Sciences discovered approx 300 fossilised eggs of Pterosaurs, a group of extinct winged dinosaur. It is world's first such mass dinosaur egg discovery.
77. ▶ Researchers at *Swiss Federal Laboratories for Materials Science and Technology* have developed a flexible material that generates electricity when stretched or compressed, paving way for smart clothing or self-powered pacemakers -
- ▶ It is a composite material made of polar nanoparticles and an elastomer - silicone and can convert mechanical movements into electrical charges. Trick is internal polarisation that changes while rubber film is being mechanically stressed.
78. ▶ Researchers discovered 161 million-year-old fossils of a tiny bird-like dinosaur named Caihong juji from China that sported flashy rainbow feathers and a bony crest on its snout to attract mates.
79. ▶ Researchers discovered a new species of edible freshwater fish while exploring Pampa river in Pathanamthitta in Kerala. Newly found fish could possibly be farmed on a commercial scale. It has been named *Labeo filiferus* (*L. filiferus*) and belongs to *Labeo* genus.
80. ▶ Researchers discovered new species of Gecko at Chhattisgarh's Kanger Ghati National Park in Eastern Ghats. Its common name is *Kanger valley rock gecko* and scientific name is *Hemidactylus kangerensis*.
81. ▶ Researchers discovered species of ant in Periyar Tiger Reserve (Kerala), as one of world's 'hottest hotspots' of biological diversity. It has been named *Tyrannomyrmex alii* (or *T. alii*), after eminent myrmecologist Musthak Ali, who is regarded as the India's 'ant man'.
82. ▶ Researchers from Bombay Natural History Society (BNHS) discovered a new species of moth, scientifically named *Elcysma Ziroensis* in Talley Wildlife Sanctuary in Arunachal Pradesh.
83. ▶ Researchers from Brunel University (UK) developed first 3D printed wearable 'battery' that stacks silicone, glue and gel electrolyte, layer by layer to make a supercapacitor. It stores energy on its surface without chemical reactions and could be used to power smartphones, electric cars, medical implants like pacemakers etc.
84. ▶ Researchers from Massachusetts Institute of Technology (USA) developed low-cost rapid test that can quickly and accurately detect Zika and dengue viruses from blood. Test is conducted through a strip which contains gold nano particles and antibodies that react to the presence of Zika or dengue virus.
85. ▶ Researchers from North Carolina State University in USA found that antibiotic resistance can be passed between bacteria found in soil and spreading manure on ground as fertiliser can also spread antibiotic resistance to bacteria in soil.
- ▶ Bacteria contain small DNA molecules known as plasmids that are separate from bacteria's actual DNA and can pick up and exchange genes between bacteria. Thus, these plasmids in bacteria are responsible for antibiotic resistance in soil also.
86. ▶ Researchers from University of British Columbia (Canada) developed earthquake-proof fibre-reinforced concrete that can enhance earthquake resistance of seismically vulnerable structures.
- ▶ Cement Material is made of eco-friendly ductile cementitious composite (EDCC) which combines cement with polymer-based fibres, flyash and other industrial additives, making it highly sustainable.
87. ▶ Researchers from University of California and University of Illinois confirmed existence of new form of matter called excitonium, made up of excitons and exhibits macroscopic quantum phenomena just like a superconductor.
- ▶ Technique called momentum-resolved electron energy-loss spectroscopy (M-EELS) was used by researchers to prove existence of excitonium.
88. ▶ Researchers from University of Tasmania (Australia) discovered rare, living specimens of stromatolites, oldest evidence of life on Earth, deep within a remote and protected World Heritage Area in Australia.

89. ▶ Researchers identified a new shark species in Atlantic Ocean, named *Atlantic sixgill shark*. They are very different from ones in Indian and Pacific Oceans on a molecular level. New species of sharks have six-gill slits, while most sharks have five-gill slits.
90. ▶ Rotavac became first Indigenously developed vaccine from India to be pre-qualified by World Health Organisation (WHO), enabling selling it internationally. Rotavac is first vaccine entirely developed in India to get this WHO status in safety and efficacy.
- ✎ Rotavac is developed by Hyderabad-based Bharat Biotech Limited and protects against childhood diarrhoea caused by rotavirus. It was developed under collaboration between India and USA.
91. ▶ Samsung developed world's smallest 8-gigabit DRAM chip, with improved energy efficiency and data processing performance. In these chips, only 1 transistor and a capacitor are required per bit, compared to 4 to 6 in SRAM.
92. ▶ Scientists ETH Zurich in Switzerland successfully created the world's shortest X-ray laser pulse with a duration of just 43 attoseconds.
- ✎ Its significance lies in fact that to fully understand dynamics during a chemical reaction, scientists must be able to study all movements of atoms and molecules on their basic time scale.
 - ✎ Molecules rotate in range of picoseconds, their atoms vibrate in the range of femtoseconds, and electrons move in the range of attoseconds.
 - ✎ This laser pulse is shortest controlled event that has ever been created by humans. Researchers can now observe in high detail how electrons move within a molecule or how chemical bonds are formed.
93. ▶ Scientists at Cornell University (USA) spotted 2 hyper-luminous starburst galaxies, extremely bright and spectacularly massive galaxies, collectively known as ADFS-27, reported to have approximately 50 times amount of star-forming gas as Milky Way.
94. ▶ Scientists at University of California (USA) identified 27 distinct types of human emotions, Instead of earlier of just 6 possible emotions - happiness, sadness, anger, surprise, fear and disgust.
95. ▶ Scientists at University of California (USA) stated that increase in warmer global temperatures and dryer weather conditions could pose a threat to survival of fragile cocoa plant, leading to disappearance of chocolate by 2050. To avoid this, gene-editing technology CRISPR must be used to evolve crops that can survive environmental challenges.
96. ▶ Scientists confirmed discovery of nearly 100 new exoplanets outside our solar system based on data from second mission of NASA's Kepler Space Telescope (K2 mission) released in 2014. With this, number of exoplanets found using NASA's K2 mission has reached almost 300.
97. ▶ Scientists detected dust belts around Proxima Centauri, indicating presence of elaborate planetary system hosted by closest star to solar system. These observations were made by Atacama Large Millimeter Array (ALMA) observatory in Chile.
98. ▶ Scientists discovered 4 new balsam species from various locations in Eastern Himalayas in Arunachal Pradesh. They are - *Impatiens haridasanii*, *Impatiens pseudocitrina*, *Impatiens nilalohitae* and *Impatiens roingensis*.
99. ▶ Scientists discovered an underwater natural city built by octopuses and named it as *Octlantis*, in Australia. Octlantis was found where octopuses were found gathering for fights in 2009.
100. ▶ Scientists discovered massive reserves of mercury hidden in permafrost (*thick subsurface layer of soil that remains below freezing point throughout the year, occurring primarily in polar regions*).
- ✎ Study says that that all frozen and unfrozen soil in northern permafrost regions contain a combined 1656 gigagrams of mercury, making it largest known reservoir of mercury on planet.
 - ✎ This discovery may have significant implications on human health and ecosystems worldwide as exposure to mercury can cause serious health problems. There would be severe environmental problems if these reservoirs do not remain frozen, as evident by Warming temperatures. Melting permafrost could release a large amount of mercury that could potentially affect ecosystems around the world.
101. ▶ Scientists discovered most ancient spiral galaxy known as A1689B11, recorded so far in universe. It was detected using powerful technique that combines gravitational lensing with Near-infrared Integral Field Spectrograph (NIFS) on Gemini North telescope in Hawaii.
- ✎ A1689B11 galaxy was born 11 billion years ago and existed just 2.6 billion years after Big Bang, when universe was only one-fifth of its present age.
102. ▶ Scientists discovered new scorpion species named Schaller's wood scorpion (*Liocheles schalleri*) from at Trishna Wildlife Sanctuary, Tripura. It has been named in honour of celebrated wildlife biologist George Schaller who has studied wildlife across world.
103. ▶ Scientists discovered new species of frog named Mewa Singh's night frog (*Nyctibatrachus mewasinghi*) in Kozhikode's Malabar Wildlife Sanctuary, Kerala in Western Ghats.
104. ▶ Scientists discovered new species of gecko in Eastern Ghats in northern Andhra Pradesh, named *Hemidactylus sushilduttai* or *Dutta's Mahendragiri gecko*, after eminent herpetologist Sushil Kumar Dutta from Odisha.
105. ▶ Scientists for first time observed Optical polarisation phenomenon (polarised light emitted by rapidly rotating stars), using High Precision Polarimetric Instrument (HIPPI).


- ✎ It was predicted by Indian astrophysicist and Nobel laureate Subrahmanyan Chandrasekhar in 1946.
 - ✎ Optical polarisation phenomenon is a measure of the orientation of the oscillations of a light beam to its direction of travel.
 - ✎ HIPPI was used to detect polarised light from Regulus, one of brightest stars in night sky about 79 light years away. It was observed that Regulus is rotating so quickly with a spin rate of 96.5% of angular velocity (approximately 320 kilometres per second).
 - ✎ Subrahmanyan Chandrasekhar was awarded the 1983 Nobel Prize for Physics with William A. Fowler for his theoretical studies of physical processes of importance to structure and evolution of stars.
106. ▶ Scientists found a small population of Red Handfishes (*Thymichthys politus*), walking along seabed off Australia's south coast in Tasmania. This species is only found in isolated island state of south-eastern Tasmania. In this small habitat within radius of 20 metres, fishes walk on seabed, instead of swimming.
 107. ▶ Scientists found that parasite called *Leptomonas seymouri* hosting virus *Lepsey NLV1* may be also responsible for spread of kala-azar (visceral leishmaniasis). Earlier it was believed that parasite *Leishmania donovani* (sandfly) alone is responsible for spread of kala-azar.
 108. ▶ Scientists from Botanical Survey of India (BSI) discovered a new species of parasitic flowering plant named *Gleadovia konyakianorum* near Tobu town of Mon district in eastern Nagaland, named in honour of Konyak tribe of Nagas.
 109. ▶ Scientists from Botanical Survey of India (BSI) identified new plant species named *Drypetes kalamii* from Buxa and Jaldapara National Parks in West Bengal, named after former President Dr. APJ Kalam. It is close relative of medicinal plant known in Sanskrit as *Putrajivah*.
 110. ▶ Scientists from Britain and USA for first time grew human eggs in laboratory from earliest stages in ovarian tissue all way to full maturity. This is first time human eggs have been developed outside human body. It can widen scope of available fertility treatments and can help in developing regenerative medicine therapies and new infertility treatments.
 111. ▶ Scientists from Broad Institute and Massachusetts Institute of Technology in USA developed RNA Editing for Programmable A to I Replacement (REPAIR), a new gene editing tool therapies that can reverse disease-causing mutations in humans.
 - ✎ REPAIR can tweak individual RNA 'letters' in human cells without making changes to entire genome and can have profound potential as a tool for both research and disease treatment.
 - ✎ REPAIR is based on gene editing tool CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) that can be used to modify DNA in cells.
 112. ▶ Scientists from Brown University (USA) created first map of water trapped in uppermost layer of Moon's soil, using NASA's Moon Mineralogy Mapper onboard of India's Chandrayaan-1 spacecraft. Map builds on initial discovery of water and related molecule – hydroxyl (consists 1 atom each of hydrogen and oxygen) in lunar soil in 2009.
 113. ▶ Scientists from Cardiff University (UK) discovered a new way to produce methanol from methane using oxygen from the air. Methanol is an important chemical often used as fuel in vehicles. New technique uses freely available air, inexpensive chemicals and an energy efficient methanol production process.
 114. ▶ Scientists from Duke University in North Carolina (USA) for first time have developed working human skeletal muscle from stem cells in lab.
 - ✎ Stem cells are undifferentiated biological cells that can differentiate into specialized cells and can divide to produce more stem cells, found in multicellular organisms.
 - ✎ Scientists developed human skeletal muscle using adult skin or blood cells that were reprogrammed into a juvenile, versatile state. This may benefit several people suffering of degenerative muscular diseases. It will allow scientists to grow endless amount of functioning muscle in lab to test to test drugs and gene treatments for degenerative diseases.
 115. ▶ Scientists from Florida State University (USA) developed new tool for objectively defining onset and demise of Indian Summer Monsoon (ISM). The new method uses rainfall rates to mark span of ISM at any given location throughout affected region.
 116. ▶ Scientists from Indian Institute of Science (IISc) Bengaluru indigenously developed country's first super critical carbon dioxide (S-CO₂) Brayton Test Loop facility. It is first test loop technology coupled with solar heat source in world that will generate clean energy from power plants, including solar thermal, as part of Indo-US consortium- Solar Energy Research Institute for India and United States (SERIUS).
 - ✎ It uses supercritical CO₂ (SCO₂) instead of steam to generate more power. Supercritical refers to state of CO₂ above its critical temperature of 31 C and critical pressure of 73 atmospheres, which makes it twice as dense as steam.
 - ✎ This Next generation and waterless super critical CO₂ Brayton cycle test loop for power generation will be useful for meeting energy needs. It has potential to replace steam based nuclear and thermal power plants, reducing carbon foot print significantly.
 117. ▶ Scientists from Massachusetts Institute of Technology (USA) found a novel way to induce plants to give off dim light by embedding specialised nanoparticles into their leaves.
 - ✎ It has great significance as it will make plants function as a desk lamp, powered by energy metabolism of the plant itself and not by electricity connection.

 To create glowing plants, scientists have used luciferase, an enzyme that gives fireflies their glow. Luciferase acts on a molecule called luciferin, causing it to emit light.

118. ▶ Scientists from Rockefeller University (USA) discovered a new class of antibiotics called malacidins, produced by microorganisms living in soil and dirt and is capable of killing off several antibiotic-resistant pathogens.

 Malacidins are a distinctive class of antibiotics that are commonly encoded in soil microbiomes. They have never been reported in culture-based NP (Natural Products) discovery efforts. This discovery could be a useful weapon in the field of medicines.

119. ▶ Scientists from Thiruvananthapuram based CSIR-National Institute for Interdisciplinary Science and Technology (CSIR-NIIST) have developed an organic filter that allows only near-infrared (NIR) light to pass through it. It was found to absorb light from 300-850 nm (both ultraviolet, visible and part of NIR light) and transmit NIR light from 850-1500 nm.

 Its significance lies in the fact that currently available inorganic filters are expensive and brittle whereas organic filters are easy to process and flexible too. The filter can be used for night vision glasses, night photography. It will also have applications in security and forensics such as identifying blood stains on dark fabric which are invisible to naked eyes.

120. ▶ Scientists from the US have developed a smart bandage that can precisely control dose and delivery schedule of medication tailored for a specific type of wound, leading to faster healing. This is the first bandage that is capable of dose-dependent drug release and can be used to heal chronic wounds or battlefield injuries.

121. ▶ Scientists from the USA's Lawrence Berkeley National Laboratory discovered a new material for next-generation smart windows that will not only get a tinted look when the sun is too bright but will also convert solar energy into electricity. Researchers discovered a form of perovskite that works well as a stable and photoactive semiconductor material that can reversibly switch between transparent and non-transparent state, without degrading its electronic properties.]

122. ▶ Scientists from the University of Manchester (UK) created the world's first *molecular robot - millionth of a millimetre in size*. It is made up of just 150 carbon, hydrogen, oxygen and nitrogen atoms which are basic building blocks required to form molecules. Such molecular robots can be used for medical purposes, advanced manufacturing processes and even building molecular factories and assembly lines.

123. ▶ Scientists from the University of Michigan (USA) developed a new type of neural network chip using a reservoir computing system to improve the efficiency of teaching machines to think like humans.

 Network developed using this system can predict words before they are said during conversation and help predict future outcomes based on the present.

124. ▶ Scientists from the Zoological Survey of India (ZSI) discovered 3 new species of eel along the northern Bay of Bengal coast - *Gymnothorax pseudotile*, *Gymnothorax visakhaensis* and *Enchelycore propinqua*.

 There are about 1,000 species of eels identified so far across the world. In India, there are around 125 species of eels identified.

125. ▶ Scientists from the Zoological Survey of India (ZSI) discovered a new frog species in the fast flowing streams in the Talley Valley Wildlife Sanctuary (WLS) in the Lower Subansiri district of Arunachal Pradesh. It is named *Odorrana arunachalensis*.

126. ▶ Scientists identified a new bacterium from a lime quarry in Karnataka and it will be expected as a source of antibiotics for several diseases including malaria. It is named as *Allostreptomyces indica* YIM 75704T and belongs to *Streptomycetaceae* a family of bacteria.

127. ▶ Scientists in Austria and China made the first video call using quantum encryption, that is said to be unhackable. Encryption through quantum networks uses quantum particles to transfer information from one point to another and hacking attempts would create detectable disturbances in the system.

128. ▶ Scientists successfully detected gravitational waves for the 4th time coming from the merger of 2 massive black holes. It was for the first time, these waves were simultaneously detected by US-based Laser Interferometer Gravitational-wave Observatory (LIGO) and Italy-based Virgo detectors. First 2 detections were made in September and December 2015 and the 3rd time it was detected in January 2017.

129. ▶ The Space Kingdom of Asgardia (virtual nation) launched its first satellite 'Asgardia-1' into space from NASA's Wallops Flight Facility in Virginia.

 Asgardia (virtual nation) project was proposed in 2016 by Russian scientist and billionaire Igor Ashurbeyli.

130. ▶ The US Food and Drug Administration (USFDA) approved a new leukemia treatment, called Kymriah. Each dose of Kymriah contains the patient's own immune cells that are genetically modified using a virus. This therapy is known as chimeric antigen receptor T-cell therapy (CAR-T), gives the cells the ability to recognize and kill the source of cancer.

131. ▶ The USA-based National High Magnetic Field Laboratory tested the world's strongest superconducting magnet 32 T, producing 32 teslas (a unit of magnetic field strength), 33% stronger than the previous record.

 32 T will allow physicists studying materials to explore how electrons interact with each other and their atomic environment.

132. ▶ The USA-based SpaceX for the first time ever has successfully launched the Dragon spacecraft with a used Falcon 9 rocket, as part of a resupply mission to the International Space Station (ISS). It was SpaceX's 13th of 20 missions under a \$1.6 billion contract with the National Aeronautics and Space Administration (NASA).

133. ▶ USA space flight company SpaceX launched the world's most powerful operational rocket 'Falcon Heavy' into space, carrying a red Tesla Roadster car belonging to SpaceX and Tesla founder Elon Musk.
- ✎ The car was outfitted with a mannequin dressed in a spacesuit, a high-data storage unit containing Isaac Asimov's science fiction book series, Foundation Trilogy, and a plaque bearing names of 6000 SpaceX employees.
134. ▶ USA's NASA discovered 8th planet in Our Solar System, circling Kepler-90, a Sun-like star which is 2545 light-years far from Earth.
- ✎ Newly-discovered planet Kepler-90i was discovered in data from NASA's Kepler Space Telescope, using Machine Learning from Google.
135. ▶ USA's NASA tested supersonic landing parachute that will be deployed in its Mars rover mission set to launch in 2020, called Advanced Supersonic Parachute Inflation Research Experiment (ASPIRE). Mission will rely on special parachute to slow spacecraft down as it enters Martian atmosphere at over 5.4 kilometres per second.
136. ▶ USA's National Aeronautics and Space Administration (NASA) approved 2nd extension of Dawn mission at Ceres dwarf planet which is largest object in asteroid belt between Mars and Jupiter.
- ✎ During this extension, Dawn will descend to lower altitudes than ever before at dwarf planet. Priority of second extension mission is to collect data with Dawn's gamma ray and neutron spectrometer, which measures number and energy of gamma rays and neutrons.
137. ▶ USA's Space Exploration Firm SpaceX launched 10 French-designed and USA built satellites for Iridium Satellite Constellation using Falcon 9 Rocket. It provides voice and data coverage to satellite phones, pagers and integrated transceivers over Earth's entire surface.
138. ▶ World Health Organisation (WHO) has given its pre-qualification to Typbar Typhoid Conjugate Vaccine (TVC) developed by Hyderabad based Bharat Biotech for global use.
- ✎ Typbar TCV is world's first typhoid vaccine clinically proven to be administered to children from six months of age to adults, and confers long-term protection against typhoid fever.
139. ▶ World's First 3D-printed cycling bridge has been made in Gemert (Netherlands). 3D printing is a method of manufacturing an object using a computer by placing layers of material one over other.
140. ▶ World's biggest flooded cave has been discovered in Mexico, after researchers connected 2 underwater caverns in eastern Mexico to reveal biggest flooded cave on planet. It is significant discovery as it could shed new light on ancient Maya civilization. The total length of cave is 347-kms, after connecting cave system named Sac Actun (262 km) with 83-km long Dos Ojos cave system.
141. ▶ World's first floating wind farm located in Scotland started generating electricity, using five 6MW turbines procured from Norway. It is expected to generate 135GWh of electricity each year.
142. ▶ World's first hybrid electric tram powered by hydrogen fuel cells started running in Tangshan (north China's Hebei Province). It marks a big step in application of green energy in public transport as water is only emission of this Tram and it emits no pollutants.
- ✎ It can run for 40 kilometers at a maximum speed of 70 kilometers per hour after being refilled with 12 kilograms of hydrogen.
143. ▶ World's first negative emissions plant under CarbFix Project to turn atmospheric carbon dioxide (CO₂) into stone begun operations in Hellisheidi (Iceland), intended to lock away carbon dioxide by reacting it with basaltic rocks.
- ✎ In CarbFix Project, CO₂ is captured from ambient air, bound to water, and sent 700 meters underground. There, CO₂ reacts with basaltic bedrock using enhanced weathering process and forms solid minerals, creating a permanent storage solution.
144. ▶ World's heaviest bony fish ever caught weighing 2,300 kilograms has been identified in Japan, confirmed by researchers from Hiroshima University. Bony fish have skeletons made of bone rather than cartilage.

Top

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