

DETECTION OF GRAVITATIONAL WAVES CAN OPEN NEW WINDOW ON UNIVERSE

'THE DRIVING FORCE OF THE UNIVERSE IS GRAVITY'

WASHINGTON: The first-ever detection of gravitational waves, which scientists could announce today, would open a new window on the universe and its most violent phenomena. Scientists will hold a press conference today to discuss the latest in their hunt for these waves, whose existence Albert Einstein predicted in his theory of general relativity 100 years ago, according to a statement from the National Science Foundation, which has funded the research.

Scientists from the California Institute of Technology (Caltech), the Massachusetts Institute of Technology (MIT) and the Laser Interferometer Gravitational Wave Observatory (LIGO) who have been working on the detection of these waves for years will participate. Press conferences are also simultaneously scheduled at Paris's National Center for Science Research (CNRS) and also in London. The announcement of a press conference revived rumors that have been circulating in the scientific community for months that the LIGO team may have indeed directly detected gravitational waves for the first time.

These waves are produced by disturbances in the fabric of space and time when a massive object moves, like a black hole or a neutron star. Einstein theorized that they would appear like ripples in a pond that form when a stone is thrown in the water, or like a net that bows under the weight of an object

placed within-with the net serving as a metaphor for the bending of space-time. According to the rumors, the team may have observed the collision of two black holes and their fusion-leading to the detection of gravitational waves. Science magazine cited Clifford Burgess, a physicist at McMaster University in Canada and also a member of the Perimeter Institute for Theoretical Physics, as saying he deemed the rumors credible, even though he had not yet seen any documentation from LIGO.

New look at universe

The ability to observe these gravitational waves would offer astronomer and physicists a new look at the most mysterious workings of the universe, including the fusion of neutron stars and the behaviors of black holes, which are often found in the centers of galaxies. "The driving force of the universe is gravity," said Tuck Stebbins, Gravitational Astrophysics Lab Chief at NASA's Goddard Space Flight Center. "These waves are streaming to you all the time and if you could see them, you could see back to the first one trillionth of a second of the Big Bang," he told AFP.

"There is no other way for humanity to see the origin of the universe," Stebbins said he believes "we stand at a threshold of a revolutionary period in our

understanding, our view of the universe." The LIGO detectors-one in Washington and one in Louisiana-can "measure changes of spacetime at the level of 1/1000 diameter of a proton," he added. Catherine Man, an astronomer at the Cote d'Azur Observatory in France, said the detection of these waves-if confirmed-would allow astronomers to probe the interior of stars and perhaps resolve the mystery of gamma rays, which are among the most powerful explosions in the universe and whose cause remains poorly understood.

"Now we are no longer observing the universe with telescopes using ultraviolet light or visible light but we are listening to the noises produced by the effects of the gravitation of celestial bodies on the fabric of space-time, which could come from stars or black holes," she told AFP. "And since the star or black hole does not stop these waves, which move at the speed of light, they come right to us and we can therefore make models... to distinguish and detect their signatures." Previously, two Princeton scientists won the Nobel Prize for Physics in 1993 for discovering a new type of pulsar that offered indirect proof of the existence of gravitational waves. The LIGO team is collaborating with a French-Italian team on another detector, called VIRGO, that should become operational soon. — AFP

GENOME OFFERS CLUES ON THWARTING REVILED, DISEASE-CARRYING TICKS

WASHINGTON: Scientists have unlocked the genetic secrets of one of the least-loved creatures around, the tick species that spreads Lyme disease, in research that may lead to new methods to control these diminutive arachnids that dine on blood. The researchers said on Tuesday they have sequenced the genome of Ixodes scapularis, known as the deer tick or blacklegged tick, which transmits Lyme and other diseases by chomping through the skin of people and animals and releasing infected saliva as they devour blood.

The study identified more than 24,000 genes involving traits such as blood-meal digestion, manipulation of the immune response of the host being bitten to permit long periods of feeding, and detoxification of compounds such as insecticides. "They are so persistent, resilient and tenacious," said Purdue University entomologist Catherine Hill, who led the study published in the journal Nature Communications. "No need to hate the ticks, but people should be informed, understand the risks and make informed decisions to protect their health."

Cracking the tick's DNA code may expose vulnerabilities that can be exploited with new insecticides, repellents or other methods to control this parasite that thrives in wooded and grassy areas.

For example, the researchers gained insight into how the ticks regulate excretion and manage the large volume of blood they ingest, providing a possible target for new ways to control them. In addition, researchers working on a companion study identified a hormone in female ticks that regulates egg development. Determining how to block this hormone could lead to a "birth control pill" for ticks, North Carolina State University entomologist R. Michael Roe said.

The ticks, which can ingest up to 100 times their own body's size in blood, transmit bacteria, parasites and viruses that cause Lyme disease and other ailments through saliva while getting a blood meal. "Tick saliva contains a repertoire of cement compounds that binds the tick to the skin, as well as anti-coagulants, molecules that disrupt the host's immune system and prevent the human or animal from feeling the tick bite," Old Dominion University tick-borne diseases expert Daniel Sonenshine said. Lyme disease is caused by a corkscrew-shaped bacterium, Borrelia burgdorferi. It generally can be cured using antibiotics but if left untreated it can become permanently debilitating with complications including joint pain, facial paralysis, fatigue, memory loss and irregular heart rhythm. — Reuters

MEDTRONIC MAKES WAVES FOR THE MEACAT REGION, INCLUDING KUWAIT

KUWAIT: Coinciding with celebration of the first anniversary of the incredibly successful Medtronic Academy, Medtronic the global leader in medical technology, launched the ValleyLab FT10 energy platform, available in Kuwait from March, at the Arab Health Exhibition and Congress in Dubai. "Last year we launched the Medtronic Academy, which has gone on to be a resounding success, having trained 600 physicians across the MEACAT region, and this year we revealed the ValleyLab FT10 energy platform," said Dr Ned Cosgriff, Medtronic's Chief Medical Officer Emerging Markets and VP Medical Affairs, EMEA.

Dr Abdullah Al-Mulaifi, Head of the Surgical Department at The Ministry of Defense Hospital in Kuwait, who attended the ValleyLab FT10 launch at the Arab Health Exhibition, said medical innovations are vastly changing the surgical practice in Kuwait. "Patients' knowledge regarding surgical techniques are improving with eas-

ier online access and they prefer to opt for more minimally invasive techniques, as advantages far outweigh the complications," Dr Abdullah said. "As far as Kuwait and other GCC countries are concerned, whose medical infrastructure are aspiring to implement the most modern techniques in medicine, they are competent enough to support growth and innovation in the medical field including adopting the ValleyLab FT10, which is an integral and unavoidable part of modern day surgery," he said.

In addition to the ValleyLab FT10 launch, Medtronic showcased therapies that treat nearly 70 major conditions including movement disorders, spinal conditions, ear, nose and throat conditions and urological disorders such as diabetes and heart conditions.

Numerous support products that are used across a variety of procedures were also on display, including medical supplies, surgical instruments and navigation systems that help doctors see inside patients, devices that monitor patients during surgeries and technologies that monitor patients remotely.

"I think this illustrates the importance we place on matching our portfolio innovations with a solid commitment to training and support for the surgical community, thereby elevating the level of healthcare practice across the region," said Dr Cosgriff. The Medtronic Academy is a partnership with Sharjah University that provides the advantages of academic expertise, state-of-the-art facilities and innovative technologies, ultimately establish-

ing a comprehensive training platform for physicians right across the region. The Medtronic Academy has trained almost 600 physicians from across the Middle East, Africa, Central Asia and Turkey region who have participated in one or more of the 30 courses offered at the training center of excellence.

Majid Kaddoumi, VP and Managing Director of Medtronic MEACAT said that a training academy was a key deliverable for Medtronic when relocating the MEACAT headquarters to Dubai. "Our primary objective is to deliver training courses to hundreds of healthcare practitioners to improve their knowledge and skills across the areas of cardiac and vascular therapies, as well as general, thoracic and spine surgery at every level." The ValleyLab

FT10 is used by surgeons who perform gynaecological, colorectal, bariatric, general and urologic procedures for intricate techniques such as heat-sealing blood vessels and delicate incisions into body tissues. The new energy platform is designed to sense exactly the level of energy required during the procedures and deliver precisely what is needed to the tissue, allowing surgeons to perform critical procedures more efficiently. "We've built a generator that is smaller, simpler, and more intelligent in its energy delivery to provide surgeons with the ideal tool for today's complex procedures," Dr Cosgriff said. "Its innovative design reflects our commitment to meeting the needs of surgeons and Healthcare systems around the world by providing them with advanced technology and training focused on improve patient outcomes," he added.



KUWAIT: Dr Abdullah Al-Mulaifi, Head of the Surgical Department at The Ministry of Defense Hospital in Kuwait.

EXCLUSIVE INTERVIEW WITH DR ABDULLA AL-MULAIFI TALKING ABOUT VALLEYLAB FT10

Kuwait Times: How is medical innovation changing the healthcare landscape in Kuwait? Can you share some examples from your own field?

Dr Abdullah Al-Mulaifi: Medical innovation has largely influenced the healthcare sector in Kuwait. Introduction of laparoscopy (Key hole surgery) in abdominal surgery considerably reduced the operating time, avoids large incisions thus avoiding surgical trauma, less post operative pain, and shorter duration of hospital stay. Thus significantly reducing morbidity and mortality following surgery. There is an overall reduction in incidence of post op complications like deep vein thrombosis, lung infections as patients were mobilized early on. More complex gastrointestinal surgeries including cancer surgeries are made easier by sophisticated laparoscopic instruments (eg: linear cutters, anastomotic staplers, harmonic scissors, ligasure, ligaclips etc are a few of many laparoscopic instruments)

THD (Transanal haemorrhoidal dearterialisation) is one of the novel techniques used in the modern day management of piles. Locating the feeding vessels to pile masses by ultrasound guidance and ligating those is the technique used. Again there is no surgical wounds, post-operative pain is considerably low when compared to conventional techniques, and early resume to normal activities.

KT: How do you think it will change in the next 5 years?

Al-Mulaifi: In the next 5 years, surgeons will be increasingly using the above mentioned techniques which are patient friendly.

The recent medical innovation will definitely change the surgical practice in Kuwait and GCC in the long run. The patients knowledge regarding the surgical techniques are fast improving with easier online access and they prefer to opt for more minimally invasive techniques as advantages far outweigh the complications.

KT: How do products like ValleyLab FT10 contribute to this development?

Al-Mulaifi: ValleyLab FT10 is an integral and unavoidable part of modern day surgery, which provides energy platform for cautery for almost all surgical procedures of different surgical specialties and laparoscopic instruments.

As far as Kuwait and other GCC countries are concerned, whose medical infrastructure are aspiring to implement most modern techniques in modern medicine, are competent enough to support growth and innovation in medical field.



KUWAIT: Photo shows the ValleyLab FT10.



ERFURT, THURINGIA, Germany: Lion "Joco" lays in his enclosure and yawns during an inventory at the Thuringer Zoopark zoo in Erfurt, eastern Germany yesterday. — AFP

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