The Lord is like a strong tower, where the righteous can go and be safe.
Proverbs 18:10

ISSN [illegible]

DIYARYO KABITENYO

Nagmamalasakit sa lalawigan

Entered as FIRST CLASS MAIL at Imus Post Office with Business Mail Permit No. [illegible]

Vol. 23 No. 9 | April 20-26, 2020 | P 15.00

Be alert, stand firm in the faith, be brave, be strong.
1 Corinthians 16:13

Cavite starts mass testing for coronavirus

Cavite province began last April 14 mass testing for the novel coronavirus disease, according to Governor Jonvic Remulla.

"Expect the positive cases to increase but expect also the spread of the virus to decrease. We will exert all efforts to stop the spread of this virus," Remulla said on his Facebook page last April 14.

The mass testing comes after the Department of Health accredited the laboratory of the De la Salle [illegible] Health Sciences Institute (DLSU-HSI).

"Shout out to DLSU-HSI. They have been amazing with their work. I couldn't have asked

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Cavite's testing hubs can accommodate up to 30 cases a day.

Remulla warns cockfight aficionados in the time of coronavirus

Governor Jonvic Remulla on April 11 gave a soothing warning to his constituents who would insist on holding illegal cockfight or "tupada" while the province and the entire Luzon is under strict community quarantine to prevent the spread of the highly contagious coronavirus.

"Ako po ay [illegible] bagay na ito. Ngayon sa panahon ng COVID, [illegible]," Remulla wrote on his Facebook page.

Remulla said that he has given "strict instructions" that all those caught engaged in illegal gambling will be subjected to inquest, which means that they will be detained until a judge will be available for

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DIYARYO KABITENYO
ISSN: 2651-8215
ARNULFO BARCO
Publisher - Editor
GENER BARCO
Operations Manager
DIYARYO KABITENYO [illegible] weekly and circulated throughout the province of Cavite. It has its editorial and business offices at Block 10 Lot 1 [illegible] Subdivision, Anabu I-C, City of Imus, Cavite. It is registered at the Department of Trade and Industry [illegible]. Our cellphone number is [illegible]
Subscription Rate: 1 month P 40.00; 3 months 120.00; 6 months 240.00
Advertising Rate: Commercial [illegible]; Legal [illegible]
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Publishers Association of the Philippines, Inc.

(CAVITE... from page 1)

ter partner for Cavite," said Remulla.

Remulla said the province has 3 PCR machines to make the process faster. Residents who will test positive for COVID-19 will be immediately isolated.

Remulla reminded residents not to go to the DLSU laboratory for testing, however. Samples will be taken from designated areas in the different local government units.

"Nag umpisa na po ang mass testing natin. Ang Bacoor, Imus, at Dasmarinas ang may schedule ngayon. Dati isang linggo ang resulta, ngayon 24-48 hours ay alam na," he said.

(REMULLA... from page 1)

their bail hearing.

Those apprehended will be lucky to have a bail hearing by mid-May because they will have to queue after cases that were filed earlier, Remulla said.

Cavite authorities arrested 26 people for illegal cockfighting on Good Friday, April 10.

Gene variant staves off Alzheimer's in some people

People with a gene variant that puts them at high risk for Alzheimer's disease are protected from its debilitating effects if they also carry a variant of a completely different gene, Stanford University School of Medicine investigators report in a large new study.

Their findings, published Apr. 13 in JAMA Neurology, suggest that a substantial fraction of the estimated 15% of Americans carrying the high-risk gene variant are protected to some degree from Alzheimer's disease by a variant of the other gene. (A gene will often come in a variety of versions, or variants, that can produce different traits.)

The findings also may help drug developers better identify clinical trial participants and treatments for what, despite billions of dollars spent in pursuit of effective therapies, remains a disease without a cure.

About 5 million Americans -- including roughly 1 in 10 people age 65 or older and one-third of those age 85 or older -- have symptomatic Alzheimer's disease. Even larger numbers have a subtler precursor called mild cognitive impairment. About half with this condition move on to full-blown Alzheimer's. There are medications that can slow development of cognitive symptoms somewhat, but no available drugs prevent the disease's progression, or extend patients' lives.

What causes Alzheimer's isn't well understood. There are probably numerous factors. But scientists have known for three decades about one main contributor to the disorder: a gene variant, ApoE4, that's more than three times as frequent in Alzheimer's patients than among people without the disease.

"While 15% of healthy people have the ApoE4 gene variant, it's present in more than 50% of Alzheimer's patients," said Michael Greicius, MD, MPH, associate professor of neurology and director of the Stanford Center for Memory Disorders. "One copy of ApoE4 triples or quadruples your risk, compared with no copies. If you're carrying two copies, your risk goes up tenfold."

Greicius is the senior author of the study. Postdoctoral scholar Michael Belloy, PhD, is the lead author.

"Having one or two copies of ApoE moves the age at which you get sick earlier by five to ten years," Greicius said. "But, it turns out, not all ApoE4 carriers are destined to develop the disease. The gene variant we studied protects you from getting Alzheimer's."

A hallmark of Alzheimer's is the aggregation in the brain of gummy deposits, or plaques, composed of a protein called beta-amyloid. Amyloid aggregation starts more than 10 years before symptoms appear.

Lung-heart super sensor on a chip tinier than a ladybug

During a stroll, a woman's breathing becomes a slight bit shallower, and a monitor in her clothing alerts her to get a telemedicine check-up. A new study details how a sensor chip smaller than a ladybug records multiple lung and heart signals along with body movements and could enable such a future socially distanced health monitor.

The core mechanism of the chip developed by researchers at the Georgia Institute of Technology involves two finely manufactured layers of silicon, which overlay each other separated by the space of 270 nanometers — about 0.002 the width of a human hair. They carry a minute voltage.

Vibrations from bodily motions and sounds put part of the chip in flux, making the voltage flux, too, thus creating readable electronic outputs. In human testing, the chip has recorded a variety of signals from the mechanical workings of the lungs and the heart with clarity, signals that often escape meaningful detection by current medical technology.

"Right now, medicine looks to EKGs (electrocardiograms) for information on the heart, but EKGs only measure electrical impulses. The heart is a mechanical system with muscles pumping and valves opening and shutting, and it sends out a signature of sounds and motions, which an EKG does not detect. EKGs also say nothing about lung function," said Farrokh Ayazi, Ken Byers Professor in Georgia Tech's School of Electrical and Computer Engineering.

The chip, which acts as an advanced electronic stethoscope and accelerometer in one, is aptly called an accelerometer contact microphone. It detects vibrations that enter the chip from inside the body while keeping out distracting noise from outside the body's core like airborne sounds.

"If it rubs on my skin or shirt, it doesn't hear the friction, but the device is very sensitive to sounds coming at it from inside the body, so it picks up useful vibrations even through clothing," Ayazi said.

The detection bandwidth is enormous — from broad, sweeping motions to inaudibly high-pitched tones. Thus, the sensor chip records all at once fine details of the heartbeat, pulse waves traversing the body's tissues, respiration rates, and lung sounds. It even tracks the wearer's physical activities such as walking.

The signals are recorded in sync, potentially offering the big picture of a patient's heart and lung health. For the study, the researchers successfully recorded a "gallop," a faint third sound after the "lub-dub" of the heartbeat. Gallops are normally elusive clues of heart failure.

The researchers published their results in the journal npj Digital Medicine on February 12, 2020. The research was funded by the Georgia Research Alliance, the Defense Advanced Research Projects Agency (DARPA), the National Science Foundation, and the National Institutes of Health. Study coauthor Divya Gupta, M.D., a cardiologist at Emory University, collaborated in testing the chip on human participants.

Medical research has tried to make better use of the body's mechanical signals for decades but recording some — like waves traversing multiple tissues — has proven inconsistent, while others — like gallops — have relied upon clinician skills influenced by human error. The new chip produces high-resolution, quantified data that future research could match to pathologies in order to identify them.

"We are working already to collect significantly more data matched with pathologies. We envision algorithms in the future that may enable a broad array of clinical readings," Ayazi said.

Though the chip's main engineering principle is simple, making it work and then manufacturable took Ayazi's lab ten years, mainly because of the Lilliputian scale of the gap between the silicon layers, i.e. electrodes. If the 2-millimeter by 2-millimeter sensor chip were expanded to the size of a football field, that air gap would be about an inch wide.

"That very thin gap separating the two electrodes cannot have any contact, not even by forces in the air in between the layers, so the whole sensor is hermetically sealed inside a vacuum cavity," Ayazi said. "This makes for that ultralow signal noise and breadth of bandwidth that are unique."

Influenza: researchers show that new treatment reduces spread of virus

The antiviral drug baloxavir (trademarks Xofluza), is the first treatment for influenza with a new mode of "action" to be licensed in nearly 20 years. It was approved in Australia in February 2020 by the Therapeutic Goods Administration (TGA) and has been used to treat influenza in Japan, the USA, and several other countries since 2018.

Researchers at the WHO Collaborating Centre for Reference and Research on Influenza at the Peter Doherty Institute for Infection and Immunity (Doherty Institute) — a joint venture between the University of Melbourne and Royal Melbourne Hospital) and Imperial College London tested whether baloxavir could prevent the spread of influenza virus in an animal model to conditions that mimicked household settings, including direct and indirect contact. They also compared the treatment to oseltamivir (trademarks Tamiflu), a widely prescribed influenza antiviral.

Published April 16, 2020 in PLoS Pathogens is a detailed report of the study, which was conducted in ferrets — considered the gold standard animal model for evaluating influenza — detailing how baloxavir reduced the transmission of influenza across all settings and did so immediately. Conversely, oseltamivir did not reduce the transmission of influenza in other ferrets.

First author Lee Yi Yang Lee, a medical scientist at the WHO Collaborating Centre for Reference and Research on Influenza, believes the results are an important breakthrough in our understanding of managing the influenza virus.

"Our research provides evidence that baloxavir can have a dramatic dual effect: a single dose reduces the length of influenza illness, while substantially reducing the chance of passing it on to others," Mr Lee said.

"This is very important because current antiviral drugs only treat influenza illness in the infected patient. If you want to reduce the spread of influenza to others, people in close contact need to take antiviral drugs themselves as soon as they get infected."

Senior author Professor Wendy Barclay, head of the Department of Infectious Diseases at Imperial College London, said if the results of the study were replicated in humans, the discovery could be a game changer in stemming outbreaks of influenza, particularly amongst vulnerable groups.

A gut-to-brain circuit drives sugar preference and may explain sugar cravings

A little extra sugar can make us crave just about anything, from cookies to confections to coffee sweetened to whipped cream. But its appearance doesn't fully explain our desire. Instead, new research shows this magic molecule has a back channel to the brain.

Like other sweet-tasting things, sugar triggers specialized taste buds on the tongue. But it also activates an entirely separate neurological pathway — one that begins in the gut, Howard Hughes Medical Institute investigator Charles Zuker and colleagues report on April 15, 2020 in the journal Nature.

In the experiment, signals heralding sugar's arrival reach the brain, where they motivate an appetite for more, the team's experiments with mice showed. This gut-to-brain pathway appears packs, responding only to sugar molecules — not artificial sweeteners.

Scientists already know sugar exerts unique control over the brain. A 2008 study for example, showed that mice without the ability to taste sweetness can still prefer sugar. Zuker's team's discovery of a sugar-sensing pathway helps explain why sugar is special — and points to ways we might quell our insatiable appetite for it.

"We need to separate the concepts of sweet and sugar," said Zuker, a neuroscientist at Columbia University. "Sweet is liking, sugar is wanting."

Aspirin linked to reduction in risk of several cancers of the digestive tract

Aspirin is associated with a reduction in the risk of developing several cancers of the digestive tract, including some that are almost invariably fatal, such as pancreatic and liver cancers.

The largest and most comprehensive analysis to date of the link between aspirin and digestive tract cancers, published in the leading cancer journal Annals of Oncology April 15, 2020, found reductions in the risk of these cancers of between 22% and 38%.

Aspirin has been linked to a reduction in the risk of bowel cancer for some time, and other, smaller analyses have found associations with cancers of the esophagus (the food pipe or gullet) and stomach.

This analysis looked at evidence from 113 observational studies investigating cancers in the general population published up to 2019, of which 45 studies were on bowel cancer and included 156,000 cases. In addition to bowel cancer, the cancers investigated included those of the head and neck, esophagus, stomach, the part of the stomach that connects to the esophagus (gastric cardia), liver, gallbladder and bile ducts (hepato-biliary) and pancreas.

The researchers, led by Dr Cristina Bosetti (PhD), head of the Unit of Cancer Epidemiology at the Mario Negri Department of Oncology, Milan (Italy), found that regular use of aspirin, defined as taking at least one or two tablets a week, was associated with a significant reduction in the risk of developing all these cancers, apart from head and neck cancer.

Specifically, aspirin use was linked to 27% reduced risk of bowel cancer (45 studies), 33% reduced risk of esophageal cancer (13 studies), 39% reduced risk of gastric cardia (ten studies), 36% reduced risk of stomach cancer (14 studies), 38% reduced risk of hepato-biliary cancers (five studies), and 22% reduced risk of pancreatic cancer (15 studies). Ten studies of head and neck cancer did not show a significant reduction in risk.

The senior author of the paper, Carlo La Vecchia (MD), Professor of Epidemiology at the School of Medicine, University of Milan, said: "There are about 175,000 deaths from bowel cancer predicted for 2020 in the EU, of which about 100,000 will be in people aged between 50 and 74. If we assume that regular use of aspirin increases from 25% to 50% in this age group, this would mean that between 5,000 to 7,000 deaths from bowel cancer and between 12,000 and 18,000 new cases could be avoided if further studies show that aspirin does indeed cause the reduction in cancer risk.

"Corresponding figures would be approximately 3,000 deaths each for esophageal, stomach and pancreatic cancer, and 2,000 deaths from cancer of the liver. Given the unfavourable prognoses for these cancers, the number of new cases would be only slightly greater."

The researchers also analysed the effect of aspirin dose and duration on bowel cancer. They looked at low dose (100mg), regular (325mg) and high dose (500mg), combined with how many times a day, week or month it was taken.

Dr Bosetti said: "We found that the risk of cancer was reduced with increased dose; an aspirin dose between 75 and 100mg a day was associated with a 10% reduction in a person's risk of developing cancer compared to people not taking aspirin; a dose of 325mg a day was associated with a 35% reduction, and a dose of 500mg a day was associated with a 50% reduction in risk. However, the estimate for high dose aspirin was based on just a few studies and should be interpreted cautiously.

"Our findings on bowel cancer support the concept that higher aspirin doses are associated with a larger reduction in risk of the disease. However, the choice of dose should also take into consideration the potential risk of stomach bleeds, which increases with higher aspirin doses.

"Compared to people who did not take aspirin regularly, the risk of bowel cancer declined on regular aspirin users up to ten years.

Obesity is a critical risk factor for type 2 diabetes, regardless of genetics

Obesity increases the risk of developing type 2 diabetes by at least 6 times, regardless of genetic predisposition to the disease, concludes research published in Diabetologia (the journal of the European Association for the Study of Diabetes [EASD]). The study is led by Dr Theresia Schnurr and Hermina Jakupovi, Novo Nordisk Foundation Center for Basic Metabolic Research, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark, and colleagues.

Using data from a case-cohort study nested within the Diet, Cancer and Health cohort in Denmark, the authors examined the joint association of obesity, genetic predisposition, and unfavourable lifestyle with incident type 2 diabetes (T2D). The study sample included 4,729 individuals who developed type 2 diabetes during a median 14.7 years of follow-up, and a randomly selected cohort sample of 5,402 individuals (the control group).

The mean age of all participants was 56.1 years (range 50-65) and 49.6% were women. Overall, 21.8% of all participants were classified as obese, 43.0% as overweight and 35.2% as having normal weight, and 40.6% of the participants had a favourable lifestyle, 34.6% had an intermediate lifestyle and 25.4% had an unfavourable lifestyle.

Genetic predisposition was quantified using a genetic risk score (GRS) comprising 193 known type 2 diabetes-associated genetic variants and divided into 5 risk groups of 20% each (quintiles), from lowest (quintile 1) to highest (quintile 5) genetic risk. Lifestyle was assessed by a lifestyle score composed of smoking, alcohol consumption, physical activity and diet. Statistical modelling was used to calculate the individual and combined associations of the GRS, obesity and lifestyle score with developing T2D.

Compared with people of normal weight, those with obesity were almost six times more likely to develop T2D, while people who were overweight had a 2.4 times increased risk. For genetic risk, those with the highest GRS were twice as likely to develop T2D as those with the lowest, while those with the unhealthiest lifestyle were 18% more likely to develop T2D than those with the healthiest.

Individuals who ranked high for all three risk factors, with obesity, high GRS and unfavourable lifestyle, had a 14.5 times increased risk of developing T2D, compared with individuals who had a normal body weight, low GRS and favourable lifestyle.

Low-cost imaging system poised to provide automatic mosquito tracking

Mosquito-transmitted diseases such as malaria, dengue and yellow fever are responsible for hundreds of thousands of deaths every year, according to the World Health Organization (WHO). A new low-cost imaging system could make it easier to track mosquito species that carry disease, enabling a more timely and targeted response.

"A remote system like ours can dramatically reduce the labor needed to monitor mosquitos in a given area, thus greatly increasing the capability to do more monitoring," said research team leader Adam Goodwin from Johns Hopkins University, USA. "If you can provide more mosquito data, then you will more quickly catch outbreaks and save more lives."

In The Optical Society (OSA) journal Biomedical Optics Express, Goodwin and colleagues paper is part of a feature issue on Optical Technologies for Improving Healthcare in Low-Resource Settings. In the paper, they describe the new system, which is designed to transmit images from inside a mosquito trap that are detailed enough for entomologists to distinguish mosquito wing patterns and the color of scales, features that indicate whether a mosquito is a species that carries disease.

Prescribing an overdose: A chapter in the opioid epidemic

Research indicates that widespread opioid overprescribing contributed to the opioid epidemic. New research shows that this dangerous trend has apparently been coupled with another: inappropriate use of high-potency opioids.

A multi-institution research collaboration led by Mayo Clinic published its findings April 15 in JAMA Network Open. The study showed that more than half of Americans starting the most highly regulated opioids might be receiving inappropriate treatment.

"In pain management, there is a need to use a variety of treatment options, including — when appropriate — extended-release opioids and very strong immediate-acting opioids like fentanyl," says Michael Hooten, M.D., a Mayo Clinic anesthesiologist and pain medicine specialist. "However, these particular medications can cause a number of serious adverse effects, so extra safeguards are needed when these medications are prescribed." Dr. Hooten is a study co-author.

"One of the key factors in determining whether these drugs can be used safely is the presence of opioid tolerance in the patient who was prescribed one of these medications," says Dr. Hooten. "In other words, tolerance to some of the most dangerous adverse effects of opioids, including suppressing breathing and excessive sedation, develops only after a patient takes daily doses of opioids over time. Patients who are not opioid-tolerant should not be receiving high-potency fentanyl or extended-release opioid products because they are susceptible to these life-threatening adverse effects."

The medications examined in the study included high-dose, extended-release oxycodone; all doses of extended-release hydromorphone, fentanyl patches, and all varieties of transmucosal — oral or nasal delivery — fentanyl.

To determine whether these medications were inappropriately used across the U.S., the study team used pharmacy and medical claims data and linked electronic health records from the OptumLabs Data Warehouse. OptumLabs is a collaborative center for research and innovation co-founded by Optum Inc. and Mayo Clinic, and focused on improving patient care and patient value. Examining pharmacy and medical claims data from 2007 to 2016, the investigators identified nearly 900,000 instances of prescriptions during that time period that were for medications reserved for people with opioid tolerance. They removed records of people who had recently been hospitalized or who had an opioid poisoning diagnosis within the preceding six months. They also removed people who did not have at least six months of continuous insurance claims information at the time of the prescription and people with certain missing demographic information.

The remaining 115,583 instances of new outpatient prescriptions of these reserved medications occurred among 131,756 people from across the U.S.

Less than 16% of these showed evidence of prior opioid tolerance.

"Our findings are concerning because it appears that many people starting to use these drugs may be at risk for some quite serious outcomes," says Molly Jeffery, Ph.D., the study's lead author. "In general, physicians are allowed to prescribe drugs off-label — that is, without adhering to the indications or warnings included in the drug label. But these particular drugs are considered risky enough that the FDA (Food and Drug Administration) requires manufacturers to provide additional oversight and education to physicians to make sure they understand the risks associated with the drugs." Dr. Jeffery is also the scientific director of Emergency Medicine Research at Mayo Clinic.

Furthermore, regulations for one of the drug classes that the team studied — transmucosal immediate-release fentanyl, or TIRF5 — require physicians who prescribe, and pharmacists who dispense, the drugs to complete a certification process and enroll each patient.

"This process is meant to ensure patient safety while preserving access to the drugs for people who really need them," she says. "All of the drugs we studied have appropriate uses, but that does require that the physicians prescribing the drugs know the risks."

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Vol. 23 No. 9 | April 20-26, 2020 | P 10.00

Biomechanics of skin can perform useful tactile computations

Genetics linked to childhood emotional, social and psychiatric problems