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

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

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Vol. 23 No. 28 August 31-September 6, 2020 P 10.00

COVID-19 vaccine clinical trials for Cavite residents to start in two weeks - Jonvic

The clinical trials for vaccines against COVID-19 involving Cavite residents would begin in the next two weeks, Gov. Jonvic Remulla said last Aug. 28.

In a television interview, Remulla said the local government has identified the high-risk individuals who would join the trials, including policemen, drivers of public transport vehicles, factory workers, and senior citizens.

"It's not Cavite per se but Cavite and La Salle DBC, the medical school. They have a very good track record in epidemiology and

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The 27 Pangasinense students stranded in their school in Silang, Cavite due to the lockdown pose for a photo before heading back to Pangasinan. The provincial government of Pangasinan has facilitated the return of the students to their respective homes. (Photo courtesy of Province of Pangasinan)

27 Pangasinense students stranded in Silang return home

Some 27 senior high school graduates stranded in Silang, Cavite have reunited with their families after the provincial government of Pangasinan facilitated their return to the province.

In a statement last Aug. 31, the Provincial Information Office (PIO) said the students were composed of 14 males and 13 females who graduated from St. Mary of Tinmouth (The Sisters of Mary) school.

"They were not allowed to go home to Pangasinan since the start of the lockdown in March. Instead of

Some stated that they have been away from their home months before the declared quarantine periods," the

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Transplanted brown-fat-like cells hold promise for obesity and diabetes

Obesity is the main cause of type 2 diabetes and related chronic illnesses that together will kill more people around the globe this year than the Covid-19 coronavirus. Scientists at Joslin Diabetes Center have delivered a proof of concept for a novel cell-based therapy against this dangerous condition.

The potential therapy for obesity would transplant HUMBLE (human brown-like) fat cells. Human white fat cells that have been genetically modified to become similar to heat-generating brown fat cells, says Yu-Hua Tseng, PhD, a Senior Investigator in Joslin's Section on Integrative Physiology and Metabolism.

Brown fat cells burn energy instead of storing energy as white fat cells do, says Tseng, senior author on a paper about the work in Science Translational Medicine. In the process, brown fat can lower excessive levels of glucose and lipids in the blood that are linked to metabolic diseases such as diabetes.

However, people who are overweight or obese tend to have less of this beneficial brown fat — a barrier that HUMBLE cells are designed to overcome, Tseng says.

She and her colleagues created the cells from human white fat cells in a progenitor stage (not yet fully developed into their final fat form). The investigators used a variant of the CRISPR-Cas9 genome editing system to boost expression of a gene called UCP1, which triggers white fat cell progenitors to develop into brown-fat-like cells.

Transplanted into mice lacking an immune system, the HUMBLE progenitor cells developed into cells that functioned very much like the mice's own brown fat cells, says Tseng, who is also a professor of medicine at Harvard Medical School.

Her team compared transplants of these cells versus the original white fat cells in mice who were put on a high fat diet. Mice given the HUMBLE transplants displayed much greater sensitivity to insulin and ability to clear glucose from the blood (two key factors that are impaired in type 2 diabetes).

(COVID... from page 1)

they're the ones being tasked to join in this medical trial. Cavite will help La Salle HSI in getting the high risk people in joining the vaccine trial. It should start in the next two weeks," Remulla told ANC.

Earlier, Remulla said at least 10,000 Cavite residents are set to be subjected to a Phase 3 field trial of two pharmaceutical companies for a COVID-19 vaccine.

He said the residents would undergo swab testing first before being subjected to clinical trials.

He also said choosing those who would be part of the trials is not focused in one barangay but the entire Cavite province.

Remulla also said it would take a month to know the result of the medical trials.

Asked if the matter has been coordinated with the Department of Health, Remulla said it was La Salle who coordinated with the health agency.

"I've been very clear. It's spearheaded by La Salle. La Salle has been in coordination with DOH but La Salle cannot do it on its own so they're partnering with us," the governor said.

(27... from page 1)

PIO said.

The students were fetched on August 23 by the provincial government's shuttle buses from Cavite to their respective homes, it added.

"Inclusive of the free transportation, the locally stranded individuals were treated with meals and family packs," the PIO said.

It said the students were not allowed to be visited by their family members but the institution did not totally block their communication.

"The parents or guardians of the students were allowed to connect with their sons and daughters via scheduled phone calls using the institution's communication lines (for students who do not have cellular phones). With stricter administrative policy, the students were not allowed to go out of the school premises at all to safeguard their health and ensure their safety," the PIO said.

DECLARATION OF HEIRSHIP
(Extra-Judicial Settlement of Estate)

NOTICE is hereby given that the estate of the late **JOSE E. OCAMPO** who died intestate on April [illegible], 2016, a resident of [illegible], Cavite at the time of his death, consisting of the following conjugal properties:

	Transfer Certificate of Title No.	Conjugal Share of Gertrudes M. Ocampo	Conjugal Share of Jose E. Ocampo
a.	[illegible]	50%	50%
b.	[illegible]	50%	50%
c.	[illegible]	50%	50%
d.	[illegible]	50%	50%
e.	[illegible]	50%	50%
f.	[illegible]	50%	50%
g.	[illegible]	50%	50%
h.	[illegible]	50%	50%
i.	[illegible]	50%	50%
j.	[illegible]	50%	50%
k.	[illegible]	50%	50%
l.	[illegible]	50%	50%
m.	[illegible]	50%	50%
n.	[illegible]	50%	50%
o.	[illegible]	50%	50%
p.	[illegible]	50%	50%
q.	[illegible]	50%	50%
r.	[illegible]	50%	50%
s.	[illegible]	50%	50%
t.	[illegible]	50%	50%
u.	[illegible]	50%	50%
v.	[illegible]	50%	50%
w.	[illegible]	50%	50%
x.	[illegible]	50%	50%

[illegible]

GERTRUDES M. OCAMPO — [illegible]
GERALDINE O. MACAVINTA — [illegible]
EDGAR M. OCAMPO — [illegible]
JACKIELYN O. [illegible] — [illegible]
[illegible] M. OCAMPO — [illegible]

[illegible] EDGAR M. OCAMPO [illegible]

[illegible]

(Sgd.) Gertrudes M. Ocampo and Geraldine O. Macavinta on her own behalf and as representative of [illegible] M. Ocampo, [illegible] and Edgar M. Ocampo

Publication: DIYARYO KABITENYO
Dates: August 17, 24 & 31, 2020

DEED OF EXTRAJUDICIAL SETTLEMENT OF ESTATE WITH SALE

NOTICE is hereby given that the state of the deceased **JOSE ARCA and SOLEDAD S. ARCA** who both died intestate on June 1, 1998 and on March 13, 1993 both in Tanza, Cavite, respectively, consisting of a parcel of land without improvement erected thereon situated in Barangay [illegible], Municipality of Tanza, Province of Cavite, containing an area of ONE THOUSAND TWO HUNDRED FORTY (1,240) SQUARE METERS, embraced by Transfer Certificate of Title No. T-[illegible] has been adjudicated and extrajudicially settled by and among their heirs in equal shares, pro indiviso, and they CEDE, TRANSFER, and CONVEY, ABSOLUTELY and UNCONDITIONALLY by way of absolute sale, all their interest and rights of [illegible] over the above described parcel of land covered by Transfer Certificate of Title no. T-[illegible] in favor of LOURDES C. CASTILLO, for and in consideration of ONE MILLION EIGHT HUNDRED SIXTY THOUSAND PESOS (P1,860,000.00), Philippine Currency, on January 14, 2020 in Trece Martires City, Cavite, Philippines before Notary Public Atty. [illegible] and entered in his Notarial Register as Doc. No. 170 Page No. 44 Book No. [illegible] Series of 2020.

(Sgd.) **All Heirs and Buyer**

Publication: DIYARYO KABITENYO
Dates: August 24, 31 and September 7, 2020

Republic of the Philippines
MUNICIPAL CIVIL REGISTRY OFFICE
MUNICIPALITY OF TANZA
Province of Cavite

Publication Notice
R.A. 10172

NOTICE TO THE PUBLIC

CCE-[illegible]-2020 Date: August 27, 2020

In compliance with the publication requirements and pursuant to OCRG Memorandum Circular No. 2013-1 Guidelines in the Implementation of the Administrative Order No. 1, Series of 2012 (IRR on R.A. 10172), Notice is hereby served to the public that **LAURENCE BANTA**, has filed with this Office, a petition for CORRECTION OF ENTRY IN CHILD'S SEX from **"FEMALE"** to **"MALE"** in the Certificate of Live Birth of one LAURENCE BANTA, who was born on August 11, 1994 in Tanza, Cavite of parents [illegible] BANTA.

Any person adversely affected by said petition may file his/her written opposition with this Office not later than **September 14, 2020**.

(Sgd.) **MA. THERESA L. [illegible]**
Municipal Civil Registrar

DIYARYO KABITENYO – August 31 and September 7, 2020

Polymers prevent potentially hazardous mist during dentist visit

Researchers at the [illegible] University of Illinois at [illegible] Chicago couldn't stop [illegible] dentist's office that turn water into mist and send it flying into the air. If that mist contains a virus or some other pathogen, it is a health hazard for dentists and patients.

In a paper published last week in Physics of Fluids, by AIP Publishing, Alexander Yarin and his colleagues discovered that the forces of a vibrating tool or dentist's drill are no match for the viscoelastic properties of food-grade polymers, such as polyacrylic acid, which they used as a small admixture to water in dental settings.

Their results were surprising. Not only did a small admixture of polymers completely eliminate aerosolization, but it did so with ease, exhibiting fundamental polymer physics, such as coil-stretch transition, that served the intended purpose beautifully.

They tested two FDA-approved polymers. Polyacrylic acid proved more effective than xanthan gum, because in addition to its high elongational viscosity (high elastic stresses in stretching), it revealed a relatively low shear viscosity, which makes pumping it easy.

Tethering together type 2 diabetes drugs increases efficacy of combination therapy

Biomedical engineers at Duke University have shown that the efficacy of a two-pronged type 2 diabetes treatment increases when the drugs are linked by a host-sensitive tether rather than simply co-currently administered. The combination molecule is formed by an elastin-like polypeptide (ELP) linker that forms a gel-like depot when injected under the skin, which slowly dissolves and releases the active drug over time.

This novel approach features the commonly prescribed type 2 diabetes drug glucagon-like peptide-1 (GLP-1) and the cost-pulling drug candidate fibroblast growth factor 21 (FGF21) that together at once fight glucose control and promote weight reduction in diabetic mice. Coupled with the slow-release function of the ELP, the effects last longer than one week with a single injection.

Because GLP-1, a short peptide, and FGF21, a large folded protein, are such different compounds, these findings suggest that this approach to combination drug design could be applied to disease therapies beyond diabetes.

The results appear online on August 26 in the journal Science Advances.

"In the burgeoning field of multi-functional single-molecule diabetes drug design, researchers primarily unite drugs that are similar in size, structure and function," said Cadie Gilroy, a postdoctoral scholar in the University of California, Berkeley, who led the project while completing her PhD in biomedical engineering at Duke. "Being able to combine such structurally distinct drugs into a single molecule while maintaining the bioactivity and stability of each is a big technological achievement."

Type 2 diabetes is a progressive disease where body tissues become resistant to the effects of insulin, which regulates the movement of sugar from the bloodstream into cells. When this carefully tuned system breaks down, blood sugar levels remain chronically elevated and a host of serious complications can follow. While many treatment options exist, a single drug is rarely able to treat an advanced case. Conventional medications lose their potency over time and frequently cause weight gain, which itself can promote insulin resistance and exacerbate the disease.

A growing class of drugs is based on GLP-1, a naturally occurring peptide released from the intestines after a meal. GLP-1 therapy enhances the release of insulin from the pancreas while promoting weight loss.

However, the high doses of GLP-1 that are sometimes necessary to maintain healthy blood sugar levels have been shown to cause gastrointestinal distress. So, researchers are exploring combination therapies that synergistically pair GLP-1 with additional drugs to maximize glucose control, minimize side effects and augment weight loss.

While most drug combinations incorporate small peptides from the same family as GLP-1, Gilroy and Ashutosh Chilkoti, the Alan L. Kaganov Distinguished Professor of Biomedical Engineering at Duke, chose to work with FGF21. A metabolic hormone, FGF21 regulates insulin sensitivity, energy expenditure and fat metabolism within body tissues.

"FGF21 functions through a different mechanism than GLP-1, and we hypothesized that the two drugs would complement each other nicely," said Gilroy.

"GLP-1 increases insulin secretion by the pancreas, while FGF21 enhances the body's response to the insulin. GLP-1 reduces food intake, while FGF21 helps burn more calories."

But rather than simply injecting diabetic mice with both drugs at the same time, the researchers decided to link GLP-1 and FGF21 together into a single molecule. This approach to combination therapy has several advantages, as a single molecule is more predictable in how it will disperse through the body, act on its target tissues and eventually be cleared.

A single drug is also beneficial for the prescribing physician and patient, as it reduces the medication burden and simplifies the treatment regimen.

Got fatigue? Study further pinpoints brain regions that may control it

Scientists at Johns Hopkins Medicine using MRI scans and computer modeling say they have further pinpointed areas of the human brain that regulate efforts to deal with fatigue.

The findings, they say, could advance the development of behavioral and other strategies that increase physical performance in healthy people, and also illuminate the neural mechanisms that contribute to fatigue in people with depression, multiple sclerosis and stroke.

Results of the research were published online Aug. 12 in Nature Communications.

"We know the physiologic process involved in fatigue, such as lactic acid build-up in muscles, but we know far less about how feelings of fatigue are processed in the brain and how our brain decides how much and what kind of effort to make to overcome fatigue," says Vikram Chib, Ph.D., assistant professor of biomedical engineering at the Johns Hopkins University School of Medicine and research scientist at the Kennedy Krieger Institute.

Knowing the brain regions that control choices about fatigue-moderating efforts can help scientists find therapies that precisely alter those choices, says Chib. "It might not be ideal for your brain to simply power through fatigue," says Chib. "It might be more beneficial for the brain to be more efficient about the signals it's sending."

For the study, Chib first developed a novel way to objectively quantify how people "feel" fatigue, a difficult task because rating systems can vary from person to person. Physicians often ask their patients to rate their fatigue on a scale of 1 to 7, but like pain scales, such ratings are subjective and varied.

To standardize the metric for fatigue, Chib asked 20 study participants to make risk-based decisions about exerting a specific physical effort. The average age of participants was 24 and ranged from 18 to 34. Nine of the 20 were female.

The 20 participants were asked to grasp and squeeze a sensor after training them to recognize a scale of effort. For example, zero was equal to no effort and 50 units of effort were equal to half the participant's maximum force. The participants learned to associate units of effort with how much to squeeze, which helped to standardize the effort level among individuals.

The participants repeated the grip exercises for 17 blocks for 10 trials each, until they were fatigued, then were offered one of two choices for making each effort. One was a random ("risky") choice based on a coin flip, offering the chance to exert no effort or a predetermined effort level. The other choice was a predetermined set effort level. By introducing uncertainty, the researchers were tapping in to how each subject valued their effort — a way, in effect, of shedding light on how their brains and minds decided how much effort to make.

Based on whether the participant chose a risky option versus the predetermined one, the researchers used computerized programs to measure how participants felt about the prospect of exerting particular amounts of effort while they were fatigued.

"Unsurprisingly, we found that people tend to be more risk averse — to avoid — effort," says Chib. Most of the participants (19 of 20) opted for the risk-free choice of a predetermined effort level. This means that, when fatigued, participants were less willing to take the chance of having to exert large amounts of effort.

"The predetermined amount had to get pretty high in relative effort for participants to choose the coin toss option," says Chib.

Among a separate group of 10 people trained on the gripping system but not given numerous, fatiguing trials, there was no significant tendency toward picking either the risky coin toss or defined effort.

Chib's research team also evaluated participants' brain activity during the gripping exercises using functional magnetic resonance imaging (fMRI) scans, which track blood flow through the brain and show which neurons are firing more often.

Genomic analysis reveals many animal species may be vulnerable to SARS-CoV-2 infection

Humans are not the only species facing a potential threat from SARS-CoV-2, the novel coronavirus that causes COVID-19, according to a new study from the University of California, Davis.

An international team of scientists used genomic analysis to compare the main cellular receptor for the virus in humans – angiotensin converting enzyme 2, or ACE2 – in 410 different species of vertebrates, including birds, fish, amphibians, reptiles and mammals.

ACE2 is normally found on many different types of cells and tissues, including epithelial cells in the nose, mouth and lungs. In humans, 25 amino acids of the ACE2 protein are important for the virus to bind and gain entry into cells.

The researchers used these 25 amino acid sequences of the ACE2 protein, and modeling of its predicted protein structure together with the SARS-CoV-2 spike protein, to evaluate how many of these amino acids are found in the ACE2 protein of the different species.

"Animals with all 25 amino acid residues matching the human protein are predicted to be at the highest risk for contracting SARS-CoV-2 via ACE2," said Joana Damas, first author for the paper and a postdoctoral research associate at UC Davis. "The risk is predicted to decrease the more the species' ACE2 binding residues dif-

fer from humans."

About 40 percent of the species potentially susceptible to SARS-CoV-2 are classified as "threatened" by the International Union for Conservation of Nature and may be especially vulnerable to human-to-animal transmission. The study was published Aug. 21 in the Proceedings of the National Academy of Sciences.

"The data provide an important starting point for identifying vulnerable and threatened animal populations at risk of SARS-CoV-2 infection," said Harris Lewin, lead author for the study and a distinguished professor of evolution and ecology at UC Davis. "We hope it inspires practices that protect both animal and human health during the pandemic."

Several critically endangered primate species, such as the Western lowland gorilla, Sumatran orangutan and Northern white-cheeked gibbon, are predicted to be at very high risk of infection by SARS-CoV-2 via their ACE2 receptor.

Other animals flagged as high risk include marine mammals such as gray whales and bottlenose dolphins, as well as Chinese hamsters.

Domestic animals such as cats, cattle and sheep were found to have a medium risk, and dogs, horses and pigs were found to have low risk for ACE2 binding. How this relates to infection and disease risk needs to be determined by future studies, but for those species that have known infectivity data, the correlation is high.

In documented cases of SARS-COV-2 infection in mink, cats, dogs, hamsters, lions and tigers, the virus may be using ACE2 receptors or they may use receptors other than ACE2 to gain access to host cells. Lower propensity for binding could translate to lower propensity for infection, or lower ability for the infectious to spread to an animal or between animals once established.

Because of the potential for animals to construct the novel coronavirus from humans and vice versa, institutions including the National Zoo and the San Diego Zoo, which both contributed genomic material to the study, have strengthened programs to protect both animals and humans.

"Zoonotic diseases and how to prevent human to animal transmission is not a new challenge to zoos and animal care professionals," said co-author Klaus Peter Koepfli, senior research scientist at Smithsonian-Mason School of Conservation and former conservation biologist with the Smithsonian Conservation Biology Institute's Center for Species Survival and Center for Conservation Genomics. "This new information allows us to focus our efforts and plan accordingly to keep animals

Placenta can indicate how body responds to opioids during pregnancy

Scientists at the University of Missouri have discovered possible biological markers that they hope could one day help identify the presence of an opioid use disorder during human pregnancy.

Cheryl S. Rosenfeld, an author on the study, said women often take opioids for pain regulation during pregnancy, including oxycodone, so it's important to understand the effects of these drugs on the fetal placenta, a temporary organ that is essential in providing nutrients from a mother to her unborn child. Rosenfeld is a professor of biomedical sciences in the College of Veterinary Medicine, investigator in the Christopher S. Bond Life Sciences Center and research faculty member in the Thompson Center for Autism and Neurodevelopmental Disorders.

According to the Centers for Disease Control and Prevention, the number of pregnant women diagnosed with an opioid use disorder has quadrupled between 1999 and 2014.

"Many pregnant women are being prescribed opioids — in particular OxyContin, or oxycodone — to help with the pain they can experience during pregnancy, and this can lead to opioid use disorders," Rosenfeld said. "Many women also don't want to admit to taking these drugs, and we know that children born from mothers who have taken opioids during pregnancy experience post-birth conditions, such as low-birth weight. But, so far no one has studied the potential ramifications of opioid use during fetal life. Thus, we focused on the placenta because it is the main communication organ between the mother and her unborn child."

Previous studies examining these effects have used human cell cultures, but this is one of the first studies to use an animal model to examine how developmental exposure to these drugs affect the conceptus. In the study, Rosenfeld and her colleagues focused on how a mother's use of oxycodone during her pregnancy can affect a mouse's placenta. Mouse and human placentas are similar in many ways, including having placenta-specific cells in direct contact with a mother's blood. They found the use of this drug during pregnancy can negatively affect the placenta's structure, such as reducing and killing cells that produce by-products needed for normal brain development. In addition, Rosenfeld said their findings show specific differences in genetic expressions between female and male placentas in response to maternal oxycodone exposure.

"Our results show when mothers take oxycodone during pregnancy, it causes severe placental disruptions, including elevation of certain gene expressions," Rosenfeld said. "We know what the normal levels should be and if there are any changes, then we know something might have triggered such effects. For instance, in response to maternal oxycodone exposure, female placentas start increasing production of key genes essential in regulating maternal physiology. However, in male placentas, we see some of these same genes are reduced in expression. These expression patterns could be potential biomarkers for detecting exposure to oxycodone use."

Rosenfeld said by studying this in an animal model, it allows scientists to see these changes quicker than if they were completing a comparable study in people, because a pregnant mouse can give birth in 21 days compared to about nine months in people.

"This also allows us to easily study other regions of the body, especially the brain of exposed offspring, that would be affected by taking these opioids," Rosenfeld said. "We can then use this information to help epidemiologists identify behaviors that people should be looking at in children whose mothers have taken these opioids."

Rosenfeld suggests that opioids should be added to other widely discussed warning factors during pregnancy, such as smoking and drinking alcohol. She said short-term use of opioids by pregnant women, such as someone who has kidney stones, might not cause much of an effect on their pregnancy, but that likely depends on when the mother is taking the drug while pregnant.

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Researchers unravel two mysteries of COVID-19

A team from Lawson Health Research Institute and Western University has made significant steps forward in understanding COVID-19 through two back-to-back studies published last week in *Critical Care Explorations*. In one study the team has identified six molecules that can be used as biomarkers to predict how severely ill a patient will become. In the other study they are the first to report a new mechanism causing blood clots in COVID-19 patients and potential ways to treat them.

The studies were conducted by analyzing blood samples from critically ill patients at London Health Sciences Centre (LHSC). They build on a growing body of work from the team who were first in the world to profile the body's immune response to the virus by revealing a separate six molecules that could act as potential targets to treat hyperinflammation in critically ill patients.

"We've begun uncovering some of the big gun COVID-19 questions asked by clinicians and health researchers," says Dr. Douglas Fraser, lead researcher from Lawson and Western's Schulich School of Medicine & Dentistry, and Critical Care Physician at LHSC. "While the findings need to be validated with larger groups of patients, they could have important implications for treating and studying this disease."

With no proven therapies, many COVID-19 patients admitted to intensive care units (ICUs) do not survive.

"When a patient is admitted to ICU, we normally wait to see if they are going to get worse before we commit to any risky interventions.

Spit in a tube to diagnose heart attack

A saliva test could fast track heart attack diagnosis, according to preliminary research presented August 26, 2020 at ESC Congress 2020.

The innovative technique requires patients to spit into a tube and provides results in 10 minutes, compared to at least one hour for the standard blood test.

Heart attacks need urgent diagnosis, followed by treatment to restore blood flow to blocked arteries. Diagnosis is based on symptoms (such as chest pain), an electrocardiogram (ECG) and a blood test for cardiac troponin, a protein released into the blood when the heart muscle is injured.

"There is a great need for a simple and rapid troponin test for patients with chest pain in the pre-hospital setting," said study author Dr. Roi Westreich of Soroka University Medical Centre, Beer Sheva, Israel. "Currently troponin testing uses blood samples. In this preliminary study we evaluated the feasibility of a novel method using saliva."

The purpose of the study was to see if cardiac troponin could be detected in the saliva of patients with heart muscle injury.