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

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DIYARYO KABITENYO

Nagmamalasakit sa lalawigan

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

Cavite LGUs roll out BOSS for 2021

The local government units (LGUs) of the cities and municipalities in Cavite started the processing of the application of new and renewal of business permits and other transactions of government services thru their Business One Stop Shop (BOSS).

As directed by the Department of Interior and Local Government (DILG), the BOSS established by the LGUs aims to provide frontline services and assist those who wish to apply for building permits and certificates of occupancy, thereby easing bureaucratic red tape.

Starting their operations last Jan. 4, the City Government of Trece Martires and the municipalities of

Turn to page 2

PH Navy building new hangars as fleet grows

CAVITE CITY— The Philippine Navy's Naval Air Wing is set to build new hangars in its headquarters in the coming months as it continues to acquire more aircraft.

Navy officials, led by Naval Air Wing commander Commodore Karl Decapia and a representative from the RD Mandanas Construction, the civilian developer of the hangar, broke ground for the first of the three planned hangars at Naval Base Heracleo Alano in Sangley Point, Cavite City last Jan. 11.

The new P12-million hangar, dubbed as Hangar Nr. 3, will be a replica of the two long-existing hangars of the wing. It will be the first time that the 73-year-old unit will build a new hangar at the naval base in

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Navy officials break the ground for the first of three new hangars of the Naval Air Wing headquarters in Cavite City, marking the start of construction.

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(CAVITE... from page 1)

Carmona, Indang, and Mendez-Nuñez started facilitating these services for a period of three weeks until Jan. 20.

Other municipalities like the Gen. Mariano Alvarez (GMA), Alfonso, Gen. Emilio Aguinaldo-Bailen started later on Jan. 5 & 6 while the LGU Noveleta started Jan. 11 with applications accepted until Feb. 15, 2021.

Doing business in this time of pandemic, the number of applications accepted are limited to as many as 150 persons per day for the BPLO (Business Permits and Licensing Office) - Trece Martires, while the satellite BOSS of the Gen. Trias only accepts up to 180 persons on a first come first served basis with the venue located at the 3rd floor of Robinson's Place in the city that is big and comfortable enough to allow the observance of physical distancing.

Meanwhile, the City Government of Imus started as early as Jan. 3, 2021 and requires an online assessment for the renewal of business permits with the Imus BOSS located at the Imus Sports Complex.

(PH... from page 1)

decades.

The Naval Air Wing planned to build two hangars in the first five months of 2021, or before the monsoon season starts. The last remaining hangar's construction is planned for later in the year. Each hangar would have an average area of at least 700 square meters which could accommodate up to six aircraft.

Increasing demand for maritime situational awareness for the archipelagic nation paved the way for the upgrade of the Naval Air Wing, an integral component for maritime defense. It acquired several aircraft in recent years, including Beechcraft King Air C-90 patrol planes, AgustaWestland 109 helicopters, AgustaWestland AW159 helicopters and ScanEagle unmanned aerial vehicles.

The wing was upgraded from its group status in 2019. Its mission is unique from the Air Force, as it focuses on maritime defense and sea control, which is crucial, especially in times of conflict.

As a junior naval aviator in the early 90s, Decapia recalled that the Philippine Navy had only few aircraft at the time.

"When I entered the Naval Air Wing, you can count the airplanes with your fingers," he said in Filipino. "We only have a few aircraft back then and they weren't that modern. Now we don't only have modern aircraft but also expensive aircraft," he said in a speech during the groundbreaking ceremony.

"That is why there is a need to take care of these aircraft. What better way to take care of these aircraft than to establish a good system of maintenance and at least give them good housing wherein we can prolong their life span and protect them," he said.

Some of the future acquisitions of the Naval Air Wing in the coming years included the multi-purpose amphibious aircraft, medium and heavy-lift helicopters and the upgrade of naval helicopter weapons.

The unit is also expecting to acquire up to eight Beechcraft C-12 Huron aircraft from the United States within the year. A joint visual inspection of the planes in the US is scheduled in the first quarter of 2021.

The wing is also setting its sights on getting funding for long-range maritime patrol aircraft, and preparations are underway to acquire it, said Decapia, who is optimistic that this would be considered by senior defense officials.

He said the unit has already prepared the proposed circular of requirements and terms of reference so it's ready when funds would be available.

"With the security situation right now, especially in the West Philippine Sea, this is what we need," Decapia said, referring to the superior intelligence, surveillance and reconnaissance capabilities of the aircraft.

The City Government of Bacoor's online registration starts with the creation of an account in the boss.bacoor.gov.ph website to be able to set an appointment.

Also, to help the Bacooeños, the LGU extended the granting of 20% discount on the payment of current Real Property Taxes (RPT) with payment accepted until March 31, 2021, and had also announced the granting of amnesty to owners of real property for payment of interests and penalties for delinquent payees of RPT for taxable year 2019 and prior years.

The officials of the LGUs encourage all their resident constituents to be prompt with their payments to avoid incurring penalties and to avail of the discounts extended by the LGU as incentive for their cooperation, as well as for the processing of business permits and licenses to legalize their business operations to contribute to the economic recovery of the province and the whole country as well.

REPUBLIC OF THE PHILIPPINES
REGIONAL TRIAL COURT
FOURTH JUDICIAL REGION
Branch 89, Bacoor City

IN RE: PETITION FOR ADOPTION OF MINOR CZARINA JOYCE CHAVEZ SAPLAN

BSP-2019-181

SPOUSES IAN JOHN G. MOLO AND ESTELA T. CATALUNA MOLO,

Petitioner

x----------x

AMENDED ORDER

The above-entitled case is a petition for the adoption of minor Czarina Joyce Chavez Saplan filed by spouses Ian John G. Molo and Estela T. Cataluna-Molo.

NOTICE IS HEREBY GIVEN that the said petition is set for hearing on **February 5, 2021, at 2:00 in the afternoon.** All persons interested are directed to appear and show cause why said adoption should not be granted.

Let the Order be published once a week for three (3) consecutive weeks in a newspaper of general circulation in the Province of Cavite.

Ms. Mercedes Cuenca, Social Worker of this Court, is ordered to conduct an investigation relative to this petition and to prepare and submit the corresponding Child and Home Study Report.

Furnished copies of this Order and Petition the Office of the Solicitor General, the City Civil Registrar of Bacoor, Cavite, the Department of Social Welfare and Development (DSWD) Field Office IV-A, Alabang, Muntinlupa City and the Philippine Statistics Authority.

SO ORDERED.

DONE IN CHAMBER, Bacoor City, Cavite June 01, 2020.

(Sgd.) **AMALIA S. GUMAPOS-RICABLANCA**
Assisting Judge

Copy Furnished:

Atty. Alvin B. Tanguanco - Tanguanco Law Offices, Unit A-2, Eli-Cen Bldg. Good Shepherd Ave., Palico II, Imus City, Cavite

The Solicitor General
134 Amorsolo St., Legaspi Village, Makati City

Office of the City Prosecutor of Bacoor City

City Civil Registrar of Bacoor City, Cavite

Department of Social Welfare and Development (DSWD) Field Office IV-A
-Alabang-Zapote Road, Muntinlupa City

Philippine Statistics Authority
-Solicarel Building I, and II,
Ramon Magsaysay Blvd., Sta. Mesa, Manila

Note: Copies of the Petition and its attachments were already sent to the said offices together with the Order dated December 10, 2019.

Publication: DIYARYO KABITENYO
Dates: January 11, 18 & 25, 2021

No guy has a magic.
Magic is in the heart of the girl loving the guy who can send her whole being up in 'Cloud Nine' even with the mere touch on her fingertips.
-**Arnold S. Barzo**

REPUBLIC OF THE PHILIPPINES
FOURTH JUDICIAL REGION
REGIONAL TRIAL COURT
BRANCH XIX
BACOOR, CAVITE

IN THE MATTER OF PETITION FOR CANCELLATION OR CORRECTION OF ENTRIES IN THE CIVIL REGISTRY (RULE 108)

ROBERT G. NOLASCO,
Petitioner

BSP-2020-100

-versus-

LOCAL CIVIL REGISTRAR GENERAL and THE CIVIL REGISTRAR OF THE CITY OF BACOOR, CAVITE,
Respondents

x----------x

NOTICE OF HEARING

There is a petition filed by petitioner thru counsel for the cancellation or correction of entries in the Civil Registry on the grounds alleged therein.

NOTICE IS HEREBY GIVEN that said petition has been set for hearing on **January 29, 2021** at 8:30 in the morning before this Court, on which date, hour, and place, any person interested is cited to appear and show cause why the same should not be granted.

Let this Notice be published once a week for three (3) consecutive weeks in a newspaper of general circulation in the cities and province of Cavite.

Let a copy of this Notice and that of the petition be furnished the Office of the Solicitor General, Makati City; Local Civil Registrar of Bacoor City, Cavite and the Philippine Statistics Authority, Quezon City.

WITNESS THE HONORABLE ARNEL G. ESPIRITU, Judge of this Court this 3rd day of December, 2020 at Bacoor, City, Cavite, Philippines.

(Sgd.) **ATTY. MELY C. HERMOSURA-VISTA**
Branch Clerk of Court

Publication: DIYARYO KABITENYO
Dates: January 11, 18 & 25, 2021

Researchers use deep learning to identify gene regulation at single-cell level

Scientists at the University of California, Irvine have developed a new deep-learning framework that predicts gene regulation at the single-cell level.

Deep learning, a family of machine-learning methods based on artificial neural networks, has revolutionized applications such as image interpretation, natural language processing and autonomous driving.

In a study published recently in Science Advances, UCI researchers describe how the technique can also be successfully used to observe gene regulation at the cellular level. Until now, that process had been limited to tissue-level analysis.

REPUBLIC OF THE PHILIPPINES
LOCAL CIVIL REGISTRY OFFICE
PROVINCE OF CAVITE
MUNICIPALITY OF NAIC

NOTICE OF PUBLICATION

In compliance with Section 5 of R.A. 9048, a notice is hereby served to the public that (Petitioner) has filed with this Office a petition for Change of First Name from NORA to NORALYN in the birth certificate of NORA R. ISIDRO, born on JUNE 6, 1958 at NAIC, CAVITE, child of spouses SANTIAGO A. ISIDRO and PURIFICACION R. ROBLES.

Any person adversely affected by said petition, may file his written opposition to this Office not later than **January 25, 2021**.

(Sgd.) GLORIA P. BAGO
Municipal Civil Registrar

DIYARYO KABITENYO - January 11 & 18, 2021

EXTRA JUDICIAL SETTLEMENT OF ESTATE OF AGRIPINO TUMAGAY AMBAT AND GLORIA PATAWE AMBAT WITH DEED OF ABSOLUTE SALE

NOTICE is hereby given that the estate of the deceased **AGRIPINO TUMAGAY AMBAT and GLORIA PATAWE AMBAT**, who both died intestate on November 11, 2001 and February 2, 1999, at Silang, Cavite, respectively, consisting of two parcels of land located at Brgy. Cabangaan, Municipality of Silang, Province of Cavite, covered by Transfer Certificate of Title No. (T-37029) 9389, of the Registry of Deeds for Tagaytay City, and Tax Declaration of Real Property with TD No. 18-0021-00026, containing areas of SEVEN THOUSAND FOUR HUNDRED NINETY EIGHT (7,498) SQUARE METERS, more or less, and TEN THOUSAND (10,000) SQUARE METERS, respectively, has been adjudicated and extra-judicially settled by and among their heirs in equal shares; and, for and in consideration of the sum of Five Million Two Hundred Forty Nine Thousand Four Hundred Pesos (Php5,249,400.00), Philippine Currency, they do hereby SELL, TRANSFER, CONVEY and DELIVER, by way of ABSOLUTE SALE unto ZIMLA MORIA DEVELOPMENT CORPORATION the Transfer Certificate of Title No. (T-37029) 9389 and Tax Declaration of Real Property with TD No. 18-0021-00026 on December 17, 2020 at Trece Martires City before Notary Public Atty. Celia N. Cleva and entered in her Notarial Register as Doc. No. 113; Page No. 23; Book No. XLIX; Series of 2020.

(Sgd.) **REYNALDO PATAWE AMBAT**
as Heir/Seller/Attorney-in-Fact and ZIMLA MORIA DEVELOPMENT CORPORATION as Buyer

Publication: DIYARYO KABITENYO
Dates: January 11, 18 & 25, 2021

Republic of the Philippines
Province of Cavite
Municipality of Ternate
OFFICE OF THE MUNICIPAL CIVIL REGISTRAR

RA Form No. 11-1 (LCRO)

NOTICE FOR PUBLICATION

In Compliance with Section 5 of RA 9048, a notice is hereby served to the public that **RIZA INAMBUANG CASUAT** has filed in this office a petition for Change of First Name from "**CONRADO**" to "**JUNIE**" in the **Certificate of Live Birth** of **CONRADO ZAPANTA CASUAT** who was born on **JULY 14, 1906** at **TERNATE, CAVITE** and whose parents are **CONRADO RAMOS CASUAT** and **FELIPINA NINON ZAPANTA**

Any person adversely affected by said petition may file his written opposition with this office not later than **01 February 2021**

(Sgd.) **MARIETA R. LOZANO**
Municipal Civil Registrar

DIYARYO KABITENYO - January 18 & 25, 2021

Rare quadruple-helix DNA found in living human cells with glowing probes

New probes allow scientists to see four-stranded DNA interacting with molecules inside living human cells, unravelling its role in cellular processes. DNA usually forms the classic double helix shape of two strands wound around each other. While DNA can form some more exotic shapes in test tubes, few are seen in real living cells.

However, four-stranded DNA, known as G-quadruplex, has recently been seen forming naturally in human cells. Now, in new research published today in Nature Communications, a team led by Imperial College London scientists have created new probes that can see how G-quadruplexes are interacting with other molecules inside living cells.

G-quadruplexes are found in higher concentrations in cancer cells, so are thought to play a role in the disease. The probes reveal how G-quadruplexes are 'unwound' by certain proteins, and can also help identify molecules that bind to G-quadruplexes, leading to potential new drug targets that can disrupt their activity.

One of the lead authors, Ben Lewis, from the Department of Chemistry at Imperial, said: "A different DNA shape will have an enormous impact on all processes involving it – such as reading, copying, or expressing genetic information. Evidence has been mounting that G-quadruplexes play an important role in a wide variety of processes vital for life, and in a range of diseases, but the missing link has been imaging this structure directly in living cells."

G-quadruplexes are rare inside cells, meaning standard techniques for detecting such molecules have difficulty detecting them specifically.

EXTRAJUDICIAL SETTLEMENT OF ESTATE
with Deed of Absolute Sale

NOTICE is hereby given that the estate of the deceased **VICTORINA L. CUSTODIO** who died intestate on February 26, 2015, married to **ELEAZAR J. CUSTODIO** who died intestate on September 10, 2009 and **ELEUTERIO L. CUSTODIO** who died intestate on February 21, 2008, consisting of two (2) parcels of land without any improvements found thereon, situated at Biclatan, Gen. Trias, Province of Cavite, more particularly described as follows:

A. Transfer Certificate of Title TCT No. T-271901 having a total area of TWO HUNDRED TWENTY (220) square meters, more or less; and

B. Transfer Certificate of Title TCT No. T-271902 having a total area of FOUR HUNDRED FORTY (440) square meters, more or less,

has been adjudicated and extrajudicially settled by and among their heirs;

and for and in consideration of the sum of FOUR HUNDRED FORTY THOUSAND PESOS (P440,000.00), they do SELL, CEDE, TRANSFER, and CONVEY and absolutely and unconditionally the parcel of land LOT A covered by TCT No. T-271901 having a total area of TWO HUNDRED TWENTY (220) square meters, more or less, without any improvements found thereon in favor of SPOUSES DENNIS AGUDERA DE LUNA and JOSEPHINE CALATA DE LUNA;

and, for and in consideration of the sum of FOUR HUNDRED EIGHTEEN THOUSAND PESOS (P418,000.00), they do SELL, CEDE, TRANSFER, and CONVEY and absolutely and unconditionally the parcel of land LOT B- covered by TCT No. T-271902 having a total area of FOUR HUNDRED FORTY (440) square meters, more or less, in favor of CRISTINE AREGLO QUIJANO

on December 9, 2020 at Cavite City, Philippines before Notary Public Atty. Sikat V. Agbuang and entered in her Notarial Register as Doc. No. 1361; Page No. 44; Book No. 3; Series of 2020.

(Sgd.) **TERESITA CUSTODIO FERMA for herself and as Atty-in-Fact of CONSOLACION L. CUSTODIO, CLEMENTE C. CUSTODIO; RIZALISA S. CUSTODIO for herself and as Atty-in-Fact of JAY JAY S. CUSTODIO, JOCELYN S. CUSTODIO, JOSELITO S. CUSTODIO, and JET S. CUSTODIO and DENNIS AGUDERA DE LUNA and JOSEPHINE CALATA DE LUNA, Vendors-Lot A and CRISTINE AREGLO QUIJANO Vendee-Lot B**

Publication: DIYARYO KABITENYO
Dates: January 18, 25 and February 1, 2021

EXTRAJUDICIAL SETTLEMENT OF ESTATE

NOTICE is hereby given that the estate of the late **LEONARDO CUSTODIO SALVADOR** and **MAGDALENA MAGSINO SALVADOR** who both died intestate on November 15, 2017 at Capt. Novales St., Caridad, Cavite City and on January 2, 2021 at Capt. Villareal St., Caridad, Cavite City, respectively, consisting of a parcel of land with improvements found thereon, situated at Cor. Capt. Novales and Santiago St., Brgy. 38 (Sampaguita), Caridad, Cavite City, covered by TCT No. T-10450, containing an area of SIX HUNDRED FORTY FIVE (645) SQUARE METERS, more or less, has been adjudicated and extrajudicially settled by and among their heirs equally on January 9, 2021 at Cavite City, Philippines before Notary Public Atty. Sikat V. Agbuang and entered in his Notarial Register as Doc. No. 0390; Page No. 79; Book No. 1; Series of 2021.

(Sgd.) **All Heirs**

Publication: DIYARYO KABITENYO
Dates: January 18, 25 and February 1, 2021

EXTRAJUDICIAL SETTLEMENT OF ESTATE

NOTICE is hereby given that the estate of the late **TERESITA SISAYAN GENOVA** who died intestate on April 5, 2011 at Cavite City, consisting of two (2) parcels of land with no improvement found thereon, located at Brgy. Bunol, Mun. of Dasmariñas, Cavite, covered by TCT-1058182, containing an area of Ninety Six (96) Square meters and TCT T-1058183, containing an area of One Hundred Forty (140) Square meters has been adjudicated and extrajudicially settled by and between her heirs with waiver of rights and participation in the above-described property in favor of ALGEN SISAYAN GENOVA on December 21, 2020 at Cavite City, Cavite, Philippines before Notary Public Atty. Sikat V. Agbuang and entered in her Notarial Register as Doc. No. 1371; Page No. 49; Book No. 5; Series of 2020.

(Sgd.) **Both Heirs**

Publication: DIYARYO KABITENYO
Dates: January 18, 25 and February 1, 2021

Enhanced oral uptake of exosomes opens cell therapy alternative

Cell-derived exosomes are effective in treating disease when mixed with the dominant protein in breast milk and given orally, a new Smidt Heart Institute study of laboratory mice shows. The findings, published in the peer-reviewed Journal of Extracellular Vesicles, could help develop new oral medications for treating patients with muscular dystrophy and heart failure.

The study builds on more than a decade of research led by Eduardo Marbán, MD, PhD, executive director of the Smidt Heart Institute and Cedars-Sinai professor of Cardiology.

The research has focused on human cardiosphere-derived cells (CDCs) and a type of extracellular vesicle, called an exosome, that is secreted by those cells and travels throughout the body. Exosomes contain various biomolecules.

"When we started our first human trial in 2009, we were injecting the cells into the hearts of patients, and we thought the cells themselves were the therapeutic answer," Marbán said. "Now, we know it's really the exosomes that do the heavy lifting, and our recent work shows that they could be just as effective when administered orally."

Since that first study concluded in 2010, Marbán has led several studies that have each produced new insights and new methods of delivering the cells to patients and an expansion of the type of patients the cells could potentially help.

The first studies led by Marbán involved patients with heart disease and clogged arteries. After a parent of a muscular dystrophy patient asked Marbán if CDCs might help muscular dystrophy patients who experience progressive muscle weakness -- including weakness of the heart muscle -- and loss of muscle mass, Marbán began additional research projects aimed at developing treatments for muscular dystrophy patients.

"The work by Dr. Marban and his team highlight the ingenuity our investigators bring to addressing human disease," said Jeffrey A. Golden, MD, Cedars-Sinai's Vice Dean for Research and Graduate Education. "By building on his efforts to develop novel therapeutics for cardiovascular disease, he has found an exciting and novel path to treating another challenging clinical disorder, muscular dystrophy, and in so doing provided the groundwork to expand this strategy to other disorders."

Muscular dystrophy is a group of diseases caused by abnormal genes (mutations) that interfere with the production of proteins needed to form and maintain healthy muscle -- including the heart muscle.

In the most recent study, exosomes secreted by CDCs were mixed with casein, the major protein found in the milk of most mammals. The casein-coated exosomes were then fed to laboratory mice that had muscular dystrophy.

Casein is the basis of cheese and often is an ingredient in food products. Decades of medical research have shown that babies who are breastfed might have reduced risk for certain allergic diseases, asthma, obesity and Type 2 diabetes. Casein-rich breast milk, which contains many natural exosomes, also may help improve an infant's cognitive development.

In this study, laboratory mice with muscular dystrophy were organized into four groups. One group of lab mice was fed CDC-derived exosomes mixed with casein, a second group received the exosomes without casein, a third group received casein only, and a fourth group received food with no added exosomes or casein.

Those four groups were compared against a control group of lab mice that did not have muscular dystrophy.

Results showed that the mice with muscular dystrophy who were fed the CDC-derived exosomes experienced improved heart function as well as improved mobility and exercise capacity and that giving the exosomes orally distributed them throughout the body.

The cancer microbiome reveals which bacteria live in tumors

Biomedical engineers at Duke University have devised an algorithm to remove contaminated microbial genetic information from The Cancer Genome Atlas (TCGA). With a clearer picture of the microbiota living in various organs in both healthy and cancerous states, researchers will now be able to find new biomarkers of disease and better understand how numerous cancers affect the human body.

In the first study using the newly decontaminated dataset, the researchers have already discovered that normal and cancerous organ tissues have a slightly different microbiota composition, that bacteria from these diseased sites can enter the bloodstream, and that this bacterial information could help diagnose cancer and predict patient outcomes.

The results appear online on December 30 in the journal Cell Host & Microbe.

TCGA is a landmark cancer genomics program that molecularly characterized over 20,000 primary cancer and matched healthy samples spanning 33 cancer types. It has produced more than 2.5 million gigabytes of "omic" data. The atlas includes which DNA is present, what epigenetic markers are on the DNA, which DNA is turned on and which proteins are being produced. It is freely available for public use.

One study from the atlas data revealed an abundance of Fusobacterium nucleatum in colorectal cancer, which has since been shown to be indicative of stage, survival, metastasis and even drug responses of this kind of cancer. Many more studies have searched for such bacterial biomarkers, however few have been discovered. A large reason for this is contamination. When bacteria get introduced into the samples accidentally by the laboratories, it becomes difficult to discern which species were actually in the samples to begin with. While similar microbiome studies using microbe-rich material such as feces can overcome small amounts of contamination, the relatively miniscule samples taken from live human organs and tumor samples cannot.

When examining a subset of TCGA sequencing data, previous analyses found that microbial DNA from a number of species was the result of lab contamination.

"All microbiota studies are plagued by the notion that if you find a microbe, was it really in the tissue or was it contamination introduced during processing?" said Xiling Shen, the Hawkins Family Associate Professor of Biomedical Engineering at Duke. "We've invented a method that can extract the microbes that were truly in each sample and used it to build what we've called The Cancer Microbiome Atlas, which will be a tremendous resource for the community and allow us to understand how cancer alters an organ's microbiome."

The method for removing contamination from TCGA data was invented by Anders Dohlman, a graduate student in Shen's laboratory. Dohlman first compared the microbiome signatures between cancer tissues from different organs and blood, and ruled out contaminant species that showed up indiscriminately. He then compared the microbiome signatures of identical samples that were processed at separate sites, ranging from Harvard to Baylor. Dohlman concluded that the microbial species that can only be detected from a specific site would be the contaminants, allowing him to assign a unique contamination signature for each site.

"A big challenge in this process was mixed-evidence species, which are bacteria that are both a contaminant and endogenous to the tissue," said Dohlman. "But because TCGA has so many different types of data, we were able to tease it out. Big data really helps!"

The effort is already paying dividends in a variety of ways. After using Dohlman's decontamination algorithm, the researchers took a close look at the microbiota signatures of samples taken from colorectal cancer patients.

Scientists study salmonella swimming behavior as clues to infection

Salmonella enterica serovar Typhimurium bacteria (S. Typhimurium) commonly cause human gastroenteritis, inflammation of the lining of the intestines. The bacteria live inside the gut and can infect the epithelial cells that line its surface. Many studies have shown that Salmonella use a "run-and-tumble" method of short swimming periods (runs) punctuated by tumbles when they randomly change direction, but how they move within the gut is not well understood.

National Institutes of Health scientists and their colleagues believe they have identified a S. Typhimurium protein, McpC (Methyl-accepting chemotaxis protein C), that allows the bacteria to swim straight when they are ready to infect cells. This new study, published in Nature Communications, describes S. Typhimurium movement and shows that McpC is required for the bacteria to invade surface epithelial cells in the gut.

The study authors suggest that McpC is a potential target for developing new antibacterial treatments to hinder the ability of S. Typhimurium to infect intestinal epithelial cells and colonize the gut. National Institute of Allergy and Infectious Diseases scientists at Rocky Mountain Laboratories in Hamilton, Montana, led the study. Collaborators included groups from the University of Texas A&M campuses in College Station and Kingsville.

S. Typhimurium use flagella -- long whip-like projections -- to move through fluids. When the flagella rotate counterclockwise, they form a rotating bundle behind the bacteria and propel them forward. However, the flagella frequently switch rotation from counterclockwise to clockwise, disrupting the bundle and causing the bacteria to tumble and change direction. Using special microscopes and cameras to observe live S. Typhimurium, the scientists found that bacteria grown under conditions that activate their invasive behavior swam in longer straight runs because the flagella did not switch rotation from counterclockwise to clockwise. Bacteria lacking McpC still demonstrated the "run-and-tumble" method of swimming under these conditions and had an invasion defect in a calf intestine model, indicating that straight swimming is important for efficient invasion of intestinal epithelial cells.

The researchers hypothesize that controlled smooth swimming could be a widespread bacterial infection strategy. Similar smooth swimming behavior can be seen in unrelated enteric bacteria, such as Vibrio, which can cause infection when undercooked seafood is eaten. These findings may inform the development of novel antibiotics.

Bacteria carried by mosquitoes may protect them against pesticides

A common bacterial species naturally infecting mosquitoes may actually be protecting them against specific mosquito pesticides, a study has found.

Wolbachia -- a bacterium that occurs naturally and spreads between insects -- has become more frequently used in recent years as a means of controlling mosquito populations.

Scientists at the University of Reading, and the INBIOTEC-CONICET and the National University of San Juan in Argentina, studied the effect of Wolbachia on a common mosquito species and found those carrying the bacteria were less susceptible to widely used pesticides.

Dr Alejandra Perotti, an Associate Professor in invertebrate biology at the University of Reading, and a co-author of the study, said: "This shows the importance of looking more closely at how bacteria in mosquitoes and pesticides interact, especially at a time when new plans are being formulated for which methods to use, where to use them and which species to target."

Mosquitoes transmit several diseases like dengue fever, malaria, zika and yellow fever to humans through their bites, and collectively kill more than a million people worldwide every year.

DIYARYO KABITENYO
Nagmamalasakit sa lalawigan
Vol. 23 No. 48 January 18-24, 2021 P 10.00

Scientists find antibody that blocks dengue virus

A team of researchers led by the University of California, Berkeley and the University of Michigan has discovered an antibody that blocks the spread within the body of the dengue virus, a mosquito-borne pathogen that infects between 50 and 100 million people a year. The virus causes what is known as dengue fever, symptoms of which include fever, vomiting and muscle aches, and can lead to more serious illnesses, and even death.

Currently, there are no effective treatments or vaccines for the dengue virus. Since there are four different strains of the virus, building up antibodies against one strain can actually leave people more vulnerable to subsequent infection from another strain, which makes finding an effective therapeutic more difficult. Scientists using the Advanced Photon Source (APS), a U.S. Department of Energy (DOE) Office of Science User Facility located at the DOE's Argonne National Laboratory, have reported success.

The dengue virus uses a particular protein, called Non-Structural Protein 1 (NS1), to latch onto the protective cells around organs. It weakens the protective barrier, allowing the virus to infect the cell, and may cause the rupture of blood vessels. The research team's antibody, called 2B7, physically blocks the NS1 protein, preventing it from attaching itself to cells and slowing the spread of the virus. Moreover, because it attacks the protein directly and not the virus particle itself, 2B7 is effective against all four strains of the dengue virus.

Compound protects myelin, nerve fibers

A compound developed at Oregon Health & Science University appears to protect nerve fibers and the fatty sheath, called myelin, that covers nerve cells in the brain and spinal cord.

The discovery, published in the Journal of Neuroimmunology, could be important in treating or preventing the progression of multiple sclerosis and other central nervous system disorders. The new research in a mouse model advances earlier work to develop the compound -- known as sobetirome -- that has already showed promise in stimulating the repair of myelin.

"Sobetirome and related drugs are effective at stimulating myelin repair after damage has occurred. Our new findings now suggest that these drugs could also prove to be beneficial for preventing damage from occurring," said senior author Dennis Bourdette, M.D., former chair and professor emeritus of neurology in the OHSU School of Medicine. "It means that these drugs have a dual effect that we didn't know about before."

Nerve fibers carry electrical impulses between nerve cells, and myelin is an insulation-like protective sheath covering nerve fibers.

Myelin and nerve fibers become damaged in multiple sclerosis, slowing or blocking electrical signals required for us to see, move our muscles, feel sensations and think. Researchers previously developed sobetirome as a compound that mimics the effect of the thyroid hormone in stimulating the maturation of precursor cells known as oligodendrocytes, which generate myelin. OHSU scientists developed a strategy to greatly increase the delivery of sobetirome into the brain of mice -- remyelinating nerve fiber sheaths after damage had occurred.

The OHSU technology, related to these findings is licensed to a startup biotechnology company committed to developing new medications for demyelinating diseases such as MS. Co-founders of the company include Bourdette along with two other co-authors on the new study: Tom Scanlan, Ph.D., professor of physiology and pharmacology in the OHSU School of Medicine, and Ben Emery, Ph.D., associate professor of neurology in the OHSU School of Medicine.

In the new research, scientists tested the compound by inducing an autoimmune disease in a mouse model of MS, causing inflammation damage to myelin and nerve fibers.