

**The Lord is like a strong tower, where the righteous can go and be safe.**

Proverbs 18:10

ISSN: 2651-821X

# DIYARYO KABITENYO

Nagmamalasakit sa lalawigan

Entered as FIRST CLASS MAIL at Imus Post Office with Business Mail Permit No. IC-19-06-249

Vol. 24 No. 10

April 26-May 2, 2021

P 10.00

**Be alert, stand firm in the faith, be brave, be strong.**

1 Corinthians 16:13

## COVID-19 vaccine allocation for Cavite seniors on its way — Jonvic

Vaccine czar inoculated are se- Remulla said. Sec. Carlito Galvez, niors. The governor Jr. assured Gov. Jon- "As a gentle added that there vic C. Remulla that reminder: 1. Se- is an experimental the coronavirus dis- nior citizens have one-day voluntary ease (COVID-19) the highest risk vaccination drive vaccine allocation of death from for senior citizens for senior citizens COVID-19. 2. Kahit in Barangays In- sabibing nasa bahay. chican and Tibig in lang kayo ay pwede Silang.

In a Facebook pa rin mahawa sa "Abangan na- post last April 22, mga kasamahan na tin ang kalalabasan the governor en- malimit sa labas. 3. Ang hula ko ay 50- couraged senior Walang mayaman o percent sa nakare- citizens to get the mahirap sa pande- histro ang aayaw," Remulla said. A resident of results showing that indigent hanggang. Silang himself, the most Filipinos who sa mga bilyonaryo. do not want to get Everyone is at risk." Turn to page 2

### Community pantry in Kawit offering free taho goes viral

A communi- cups of taho. said it did not expect ty pantry in Kawit. Charity group to go viral for it. Cavite recently went Project Starfish, Project Starfish viral on social media which is behind the only started its com- for offering not only community pantry munity pantry last goods but also free offering free taho. April 20 and was of-



fering taho to those table and a few cups of group shared on its who were early at the taho for anyone who Facebook page. pantry last April 21. hasn't had breakfast "While grabbing yet and is hungry," the Turn to page 2

## DIYARYO KABITENYO

ISSN 2651-821X

ARNULFO BARCO

Publisher - Editor

GENER BARCO

Operations Manager

DIYARYO KABITENYO is published weekly and circulated throughout the province of Cavite. It has its editorial and business offices at Block 13 Lot 1 Liwayway Homes Subdivision, Anabu-C, City of Imus, Cavite. It is registered at the Department of Trade and Industry-Region 4, P-IV-88-No. 05354. Our cellphone number is 09179486518.

Subscription Rate:	Advertising Rate:
1 month - P. 40.00	Commercial - P200.00/col. cm.
3 months - 120.00	Legal - 180.00/col. cm.
6 months - 240.00	

### Papi

Publishers Association of the Philippines, Inc.

#### (COVID-19... from page 1)

governor said the by the province for program is purely its wide scale vacci- voluntary and that nation program will no one will be forced be delivered soon. to get inoculated if The local govern- they are not com- ment unit had ear- forttable in doing so. lier-announced that Remulla said Cavite's three million that the Novavax doses of Novavax are vaccines procured set to arrive in July.

#### (COMMUNITY... from page 1)

their free taho, the nity pantry with ex- ample on their fac- tra money from the es was priceless," the pockets of its mem- group added. bers which amounted And because of to P2,000.

that, a few more peo- The group said ple chipped in to add it had a change of more cups of taho on P250 from the P2,000 the table. budget allocated for

The group said the-purchase of food items to be given

# Shift-work causes negative impacts on health, affects men and women differently

Shift-work and at how a disruption in a man or a woman, late male and female irregular work sched- the circadian clock af- and whether you are shift-workers. ules can cause several- fects the immune sys- among quarter of the The results of health-related issues- tem in fighting off ill- modern-day labour these computer simu- and affect our defence- ness. force that has an irreg- lations conclude that against infection, ac- "Because our im- ular work schedule." the immune response- cording to new re- mune system is affect- The researchers varies with the time of- search from the Uni- ed by the circadian- created new compu- infection. Model sim- versity of Waterloo. clock, our ability to- tational models, sep- ulation suggests that- These health-relat- mount an immune re- arately for men and the time before we go- ed issues occur be- sponse changes during- women, which simu- to bed is the "worst"- cause the body's nat- the day," said Anita- late the interplay be- time to get an infec- ural clock, called the Layton, professor of- tween the circadian- tion. That is the period- circadian clock, can Applied Mathematics,- clock and the immune- of the day when our- be disrupted by incon- Computer Science. system. The model is body is least prepared- sistent changes in the- Pharmacy and Biolo- composed of the core- to produce the pro- sleep-wake schedule- gy at Waterloo. "How- clock genes, their re- and anti-inflammato- and feeding patterns- likely are you to fight- related proteins, and the- ry mediators needed- often caused by shift- off an infection that- regulatory mechanism- during an infection. researchers at Water- occurs in the morn- of pro- and anti-in- Just as importantly, an- loo developed a math- ing than midday?- flammatory mediators. individual's sex im- ematical model to look- The answer depends- By adjusting the clock,- pacts the severity of- on whether you are- the models can simu- the infection.

mount an immune re- sponse changes during- the day," said Anita- Layton, professor of- Applied Mathematics, Computer Science, Pharmacy and Biolo- gy at Waterloo. "How- likely are you to fight- off an infection that- occurs in the morn- ing than midday? The answer depends- on whether you are-

away. With the extra- Project Starfish, the- vendor, known as- money, the members- "Kuya Nelson," actu- decided to buy taho- ally offered more cups- from a vendor who- of taho but the group- was passing by. insisted on paying for

the extra cups.

Several individu- als also chipped in to- add more taho cups to- the pantry.

The group said it

will continue to serve- free taho to the people- coming to the com- munity pantry for as- long as their funds can- manage it.



Republic of the Philippines  
**REGIONAL TRIAL COURT**  
Fourth Judicial Region  
Branch 38  
Imus, Cavite

Republic of the Philippines,  
Represented by the Dept of Public Works  
And Highways (DPWH)  
Plaintiff

CIVIL CASE NO. 6774-18  
For: Expropriation  
(Lot 3294, CAD-38-D)

—VERSUS—

**JOHN DOE**  
Defendant.

**SUMMONS**  
(By Publications)

TO: **JOHN DOE**

**GREETINGS:**

WHEREAS, on March 13, 2018, plaintiff duly counsel,  
Filed a Complaint (with Urgent Prayer for the Issuance of a  
Writ of Possession) which read as follows:

Republic of the Philippines  
**REGIONAL TRIAL COURT**  
Fourth Judicial Region  
Branch 38  
Imus, Cavite

Republic of the Philippines,  
Represented by the Dept of Public Works  
And Highways (DPWH)  
Plaintiff

CIVIL CASE NO. 6774-18  
For: Expropriation  
(Lot 3294, CAD-38-D)

—VERSUS—

**JOHN DOE**  
Defendant.

**COMPLAINT**  
(With Urgent Prayer for the Issuance of a Writ of  
Possession)

Plaintiff REPUBLIC OF THE PHILIPPINES, represented  
by the DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
(DPWH), through the OFFICE OF THE SOLICITOR  
GENERAL (OSG), to this Honorable Court, respectfully states:

1. Plaintiff is a sovereign political entity with capacity to sue  
and is vested with the power and authority to condemn  
and expropriate private property for public use upon  
payment of just compensation. The Republic is exempt  
from payment of fees pursuant to Rule 141, Sec. 22 of the  
Rules of Court. It is represented herein by the DPWH, a  
government agency authorized to expropriate property

by virtue of Republic Act No. 10752, entitled "An Act  
Facilitating the Acquisition of Right-of-Way Easement or Location  
for National Government Infrastructure Projects" and may be  
notified through the Office of the Solicitor General (OSG) at  
134 Amoroso St., Legaspi Village, Makati City.

2. Defendant is herein denominated as John Doe, pursuant to  
Sec. 14, Rule 3 of the Revised Rules of Civil Procedure, since  
the owner of the Property is unknown and cannot be verified  
despite the diligence exerted to determine his/her identity,  
aliases and whereabouts.
3. Plaintiff has embarked on the Cavite-Laguna Expressway  
(CALAX) construction project to provide an efficient,  
fast, and safe road network and to spur national economic  
development, particularly in the provinces of Cavite and  
Laguna.
4. Plaintiff needs Seven Hundred Eleven (711) square meters  
of Lot 3294, CAD-20-D for the CALAX whole project is  
defined in the shaded portion of the Preliminary Survey, hereto  
attached as Annex "A". The portion of the project affecting  
the property of defendant is delineated in the Subdivision Plan  
of Land of Lot 3294, hereto attached as Annex "B". There  
are no improvements or structures found on the subject lot,  
as shown by a photograph hereto attached as Annex "C".
5. The current relevant zonal valuation by the Bureau of  
Internal Revenue (BIR) of real properties, situated in  
Kawit, Cavite including the subject property, is ONE  
HUNDRED FIFTY PESOS (PHP 150.00) per square meter,  
as shown by the property valuation of the Revenue District  
Office in Bacoor City, hereto attached as Annex "D". The  
total cost of the property needed by Plaintiff, therefore,  
is ONE HUNDRED SIX THOUSAND SIX HUNDRED  
FIFTY PESOS (PHP 106,650.00).
6. The CALAX project is covered by a pending application  
for an Environmental Compliance Certificate (ECC)  
pursuant to Presidential Decree No. 1586 and Department  
of Environment and Natural Resources Administrative Order  
No. 2693-36. Evidence of said application letter is a Letter  
dated February 24, 2017, hereto attached as Annex "E", sent  
by DPWH to DENR regarding its request for the issuance of  
an ECC and the Memorandum of Agreement between DPWH,  
UP Planades and MPCALA, hereto attached as Annex "F".  
Plaintiff acquisition of the subject property is indispensable  
in the CALAX Project. Said Property has neither been  
devoted to any expropriated for any other public use. The  
CALAX Project is being promoted in a manner compatible  
with the greatest public good and with the least injury to  
private property.
7. Pursuant to Section 6 of R.A. 10752, plaintiff is ready to  
deposit the amount of ONE HUNDRED SIX THOUSAND  
SIX HUNDRED FIFTY PESOS (PHP 106,650.00) the  
amount equivalent to 100% of the current relevant BIR zonal  
value of the affected area of the subject lot. The corresponding  
check, payable to the benefit of the person to be adjudged  
and determined in the same proceedings as the owner who is  
realized therein, to available and will be deposited with this  
Honorable Court as a requisite for the issuance of the Writ of  
Possession. Evidence thereof is the Special Allotment Release  
Order (SARO) hereto attached as Annex "G", indicating total  
funds earmarked for the CALAX Project.
8. Pursuant to Section 112 of C.A. 141, as amended, the taking  
for public use of an easement of a right-of-way is subject  
to the payment of just compensation for any improvements  
affected, thus, plaintiff posted a notice on the subject area.  
This is evidenced by a photograph of the notice, hereto  
attached as Annex "H".

16. Plaintiff is exempt from paying the docket, filing, and  
other legal fees pursuant to Section 22, Rule 141 of the  
Revised Rules of Court.

**ALLEGATIONS IN SUPPORT OF THE URGENT  
PRAYER FOR THE ISSUANCE OF WRIT OF  
POSSESSION**

11. In *Capitol Steel Corporation vs. Province Industrial  
Authority*, the Supreme Court held that the issuance of a  
writ of possession is a ministerial duty that the Honorable  
Court upon plaintiff's compliance with the guidelines set  
forth by law, thus:  
Upon compliance with the requirements, a petitioner  
in an expropriation case, in this case the respondent, is  
entitled to a writ of possession as a matter of right,  
and it becomes the ministerial duty of the trial court to  
forthwith issue the writ of possession. No hearing is  
required and the court neither exercises its discretion or  
judgment in determining the amount of the proffered  
value of the properties to be expropriated as the  
legislature has fixed the amount under Section 4 of  
R.A. No. 4974 (emphasis supplied).

12. It is also imperative for the protection of the interest of  
the government vis-a-vis its real rights over the subject  
property that the corresponding Order of Expropriation  
be issued and entered in the Primary Entry Book of the  
Registry of Deeds of Cavite City and, therefore, be  
annotated in the space provided in its Registration Book  
pursuant to Section 49 of P.D. 1525, otherwise known as  
the Property Registration Decree, which states:

Section 49. Attachments — An attachment, or a copy of  
any writ, order of process issued by a court of record,  
intended to create or preserve any claim, right, title,  
or attachment upon registered land shall be filed and  
registered in the Registry of Deeds for the province  
or city in which the land lies, and, in addition to the  
particulars required in such papers for registration, shall  
contain a reference to the number of the certificate of  
title to be affected and the registered in the Registry of  
Deeds for the province or city in which the land lies, and,  
in addition to the particulars required in such papers for  
registration, shall contain a reference to the number of  
the certificate of title to be affected and the registered  
owner of owners thereof, and also if the attachment,  
order, process or writ is not claimed on all the land,  
in any certificate of title a description sufficiently  
accurate for identification of the land or interest to be  
affected. A restraining order, injunction or mandamus  
issued by the court shall be entered and registered  
on the certificate of title affected, free of charge.

13. To ensure that the subject property is free from statutory  
liens, it is necessary that defendant be required to present  
proof of payment of the corresponding study taxes before  
this Honorable Court orders the release in their favor of  
any amount deposited by plaintiff.

**PRAYER**

WHEREFORE, plaintiff respectfully prays that the Honorable  
Court,

1. ISSUE a Writ of Possession upon plaintiff's deposit of the  
amount equivalent to the replacement cost of structures or  
improvements, if any;

2. ISSUE an Order of Expropriation;
- (a) Condemning the affected area of the subject lot for public use and for the public purpose set forth herein; and
- (b) Directing the Register of Deeds of Cavite City to register the Order of Expropriation issued by this Honorable Court in the Corresponding Certificate of Title, if any, the Primary Entry Book, and the Registration Book;
3. SET a hearing for the presentation of defendants' proof of identity and ownership of the subject lot after fifteen (15) days from service of summons upon them; and at said hearing:
- (a) Direct defendant to submit sufficient proof of their identity and ownership of the subject lot, as well as updated payment of all requisite taxes and fees to the relevant local and national government agencies, including but not limited to real property taxes on the subject lot; and
- (b) Release the check deposited with this Honorable Court to defendant, subject to clearance from plaintiff of defendant's satisfaction or completion of the requirements of proof of identity, ownership, and payment of relevant government taxes and fees, in accordance with Section 6 of R.A. 10752 and its IRR, and Commission on Audit requirements;
4. ISSUE an order directing the Register of Deeds of Cavite City to register and approve the Writ of Possession Issued by this Honorable Court in the corresponding Certificate of Title, if there is, any, the Primary Entry Book, and the Registration Book;
5. AUTHORIZE and ORDER the payment of just compensation to defendant after deducting the sum due for capital gains tax, unpaid real property taxes and other taxes and fees due the Government, if any, and/or ORDER defendant to return to plaintiff whatever amount it may have received, in excess of the just compensation as determined by this Honorable Court;
6. ORDER defendant to transmit to plaintiff the corresponding owner's duplicate Certificate of Title, should there be any, over the subject lot; and
7. Accordingly, DIRECT the Register of Deeds of Cavite City to effect the transfer ownership of the affected area of the subject lot to plaintiff and to issue the corresponding Certificate of Title in the name of the Republic of the Philippines.

Other just and equitable reliefs are likewise prayed for.

Makati City for Inna, Cavite, February 26, 2018

JONE C. CALIDA  
Solicitor General  
Roll of Attorney's No. 24852  
IBP Lifetime No. 013160, 8-18-16  
MCLE Exemption No. VI-000116, 9-28-16

JOHN EMMANUEL F. MADAMBA  
Assistant Solicitor General  
Roll of Attorney's No. 37363  
IBP No. 009142, 06-09-17  
MCLE Exemption No. V-000750, 10-1-15

CAMILLE R. BUHAIN  
State Solicitor  
Roll No. 37361/IBP No. 009133, 06-09-17  
MCLE Compliance No. V-000844

OFFICE OF THE SOLICITOR GENERAL  
134 Amorsolo St. Lungsod Village  
Makati City.

Tel. No. 8186381 loc. 329  
Telefax 891-46-82

#### EXPLANATION

(Pursuant to Section 11, Rule 13 of the 1997 Rules of Civil Procedure)

The foregoing complaint is being served by registered mail, personal service not being practicable due to lack of mangoeset.

CAMILLE R. BUHAIN  
Solicitor General

#### VERIFICATION AND CERTIFICATION

LENGR ALEX G. BOTE, Director, Public-Private Partnership Service (PPPS), Department of Public Works and Highways, with office address at 3<sup>rd</sup> Floor, DPWH Main Building, Post Area, Manila, after having been duly sworn in accordance with law, depose and state that:

1. I am authorized to initiate the present complaint for Expropriation pursuant to Department Order No. 65, Series of 2017, in relation to the DPWH Secretary's Special Order No. 38 Series of 2017.

2. I have caused the preparation and filing of the aforesaid complaint and have read and understood all the allegations contained therein, and the same are true and correct as of my personal knowledge and/or based on authentic records.

3. I have not commenced any action or filed any claim involving the same issue in any court, tribunal, or quasi-judicial agency; and 4. Should I thereafter learn that a case or similar action has been filed or pending, I undertake to promptly report each fact to the Honorable Court within five (5) days from knowledge thereof.

IN WITNESS WHEREOF, I have set my hand and affixed my signature this 26<sup>th</sup> day of February 2018 at Makati City, Philippines

LENGR ALEX G. BOTE  
Director  
Public-Private Partnership Service DPWH

SUBSCRIBED AND SWORN to before me this 26<sup>th</sup> day of February 2018 at Makati City with affiant exhibiting to me this DPWH ID No. 952602, a photocopy of which is attached hereto

Melvin P. Favorito-Medina  
State Solicitor

WITBEAN on December 03, 2020, Plaintiffs through the Office of the Solicitor General filed a Motion for leave of Court to Serve Defendants by Publication which this Court granted in its Order dated December 9, 2020.

NOW, THEREFORE, defendant are required to file with this Court, within thirty (30) days from the last date of publication of this Statement, their Answer to the Petition.

City of Inna, Cavite, March 19, 2021

(Sgt) MARIE JEAN MANSINGA  
Branch Clerk of Court

Publication - DIYARYO KABITENYO  
Date - April 19, 26 and May 3, 2021

#### EXTRA-JUDICIAL SETTLEMENT OF ESTATE OF THE DECEASED ANDRES FUSTER NIETO With WAIVER OF RIGHTS AND DONATION

NOTICE is hereby given that the estate of the late **ANDRES FUSTER NIETO** who died intestate on October 19, 1993 at Sydney, Australia, consisting of a 1/2 conjugal share over a certain parcel of land without improvement located at Barrio Molino, Municipality of Bacoor, Province of Cavite, covered by Transfer Certificate of Title Nos. T-70419 and T-70420, containing areas of TWO HUNDRED FORTY (240) SQUARE METERS and TWO HUNDRED FORTY (240) SQUARE METERS, respectively, has been adjudicated and extra-judicially settled by and among his heirs pro indiviso with waiver of rights, interest and participation in share portion in the above-mentioned parcel of lands and donation in favor of Danilo Romero Nieto, Joyce Romero Nieto and Ismael Romero Nieto, their heirs, assignees and successors-in-interest on March 28, 2017 at City of Daangbayan, Cavite, Philippines before Notary Public Atty. Candido P. Villanueva and entered in his Notarial Register as Doc. No. 294, Book No. 59, Page No. III, Series of 2017.

(Sgt.) Surviving Spouse-Heir and Cheryl Y. Torres as Attorney-in-fact of Danilo Romero Nieto, Joyce Romero Nieto and Ismael Romero Nieto

Publication - DIYARYO KABITENYO  
Date - April 26, May 3 & 10, 2021

## Review summarizes known links between endocrine disruptors and breast cancer risk

Exposure to certain endocrine-disrupting chemicals could elevate the risk of breast cancer, according to a new comprehensive review of epidemiological research. However, for many chemicals, evidence is inconsistent or still limited. The review was carried out by researchers at the universities of Hong Kong and Eastern Finland and published in Critical Reviews in Food Science and Nutrition. Endocrine-disrupting chemicals (EDCs) can interfere with the body's hormonal system, also called the endocrine system, and are widely present in the environment. They originate from a variety of sources, including pesticides, plasticizers and other industrial and pharmaceutical chemicals, as well as natural sources.



# Drug development platform could provide flexible, rapid and targeted antimicrobials

When disease outbreaks happen, response time in developing and distributing treatments is crucial to saving lives. Unfortunately, developing custom drugs as countermeasures is often a slow and difficult process.

But researchers at the University of Colorado Boulder have created a platform that can develop effective and highly specific peptide nucleic acid therapies for use against any bacteria within just one week. The work is detailed in *Nature Communications Biology* and could change the way we respond to pandemics and how we approach increasing

cases of antibiotic resistance globally.

The Facile Accelerated Specific Therapeutic (FAST) platform was created by Associate Professor Anushree Chatterjee and her team within the Department of Chemical and Biological Engineering. It can quickly produce new anti-

tibiotics for any system or disease -- from highly adaptive microbial superbugs to radiation poisoning in astronauts -- that are specifically designed to selectively target just the bacteria of interest. The paper demonstrates significant growth inhibition and other positive responses in resistant bacteria such as *E. coli*, which are adapting to current treatments much faster than new drugs can hit the market.

Traditional drug discovery methods usually

take 10 or more years and are specific to one bug or another. That is because they are based on identifying molecules from one bacteria that can then be used against other bacteria to promote human health. Unfortunately, evolution over billions of years has resulted in bacteria strains today that are increasingly resistant to this kind of approach -- aided in part by recent over prescription of antibiotics by doctors. FAST, on the other hand, can be used for any bug and enables speedy identification and testing of molecules that target new mechanisms in pathogens -- getting ahead of that curve.

Kristen Elliot, a PhD candidate in the Chatterjee Group, is the first author on the

new paper. She said the FAST system utilizes bacteria's genetic makeup to design specific and targeted antibiotics that stop their natural means of producing essential proteins, causing them to die. She added that the platform also provides a unique strategy to deliver these treatments to bacteria that are traditionally hard to target because they reside within our own host cells. To get around this, the platform essentially utilizes bacteria's natural ability to invade our own cells and manipulates it instead to be a carrier of the therapeutic.

"The applications for the real world are immense in that we have created a platform -- not just a single ther-

apeutic," she said. "It is adaptive, dynamic and can be altered to target any bacterial species that is a threat while also being modulated to develop antivirals as needed."

Recently, another paper published in PNAS showed the use of the FAST platform to create novel antibiotics against a clinical isolate of carbapenem-resistant *E. coli* that was found to be resistant to pretty much all antibiotics.

Chatterjee said that last aspect is particularly important as particular strains evolve, change and become more resistant over time. The goal, she said, is to rapidly create tailored treatments specific to the region in question, the person seeking treatment or

even the global health situation for example.

"The technology we use to treat these kinds of health issues has to be smart enough to keep up with evolving organisms and also quick enough to respond to real-time crisis," she said. "Within this platform there are multiple steps where you can design and create new drug targets, which is really key."

Chatterjee said the platform could eventually be modified to develop antivirals for treatment of common colds, the flu and most pressing, COVID-19. For now, her team is working on collecting more data to develop potential COVID-19 treatments and beginning to work towards clinical trials.

## Disrupted sleep is linked to increased risk of early death, particularly in women

For the first time, a study has shown a clear link between the frequency and duration of unconscious wakefulness during nighttime sleep and an increased risk of dying from diseases of the heart and blood vessels, and death from any cause, particularly in women.

The study of 8001 men and women, which is published April 19, 2021 in the

European Heart Journal, found that women who experienced unconscious wakefulness most often and for longer periods of time had nearly double the risk of dying from cardiovascular disease during an average of between 6 and 11 years' follow-up, when compared to the risk in general female population. The association was less clear in men, and their risk of cardiovascu-

lar death increased by just over a quarter compared to the general male population. Unconscious wakefulness, also known as cortical arousal, is a normal part of sleep. It occurs spontaneously and is part of the body's ability to respond to potentially dangerous situations, such as noise or breathing becoming obstructed. Pain, limb movements, trauma, temperature and light

can also be triggers. cause of arousals can

Dominik Linz, associate professor in the cardiology department at Maastricht University, Medical Center (The Netherlands), explained: "A common trigger for nocturnal arousals is obstructive sleep apnoea when breathing stops and the arousal system ensures the activation of our body to change our sleep position and to reopen the upper airway. Another cause of arousals can be 'noise pollution' during the night by, for example, nighttime aircraft noise. Depending on the strength of the arousal, a person might become consciously aware of the environment, but often that is not the case. Typically, people will feel exhausted and tired in the morning because of their sleep fragmentation but will not be aware of the individual arousals." Previous research has shown that sleep duration, either too short or too long, is associated with increased risks of death from cardiovascular or other causes. However, until now, it was unknown whether there was also a link with the arousal burden (a combination of the number of arousals and their duration) during a night's sleep and the risk of death.

## Astronauts' mental health risks tested in the Antarctic

Astronauts who spend extended time in space face stressors such as isolation, confinement, lack of privacy, altered light-dark cycles, monotony and separation from family. Interestingly, so do people who work at

international research stations in Antarctica, where the extreme environment is characterized by numerous stressors that mirror those present during long-duration space exploration.

To better under-

stand the psychological hurdles faced by astronauts, University of Houston professor of psychology Candice Alfano and her team developed the Mental Health Checklist (MHCL), a self-reporting instrument

for detecting mental health changes in isolated, confined, extreme (ICE) environments. The team used the MHCL to study psychological changes at two Antarctic stations. The findings are published in *Acta Astronautica*.

"We observed significant changes in psychological functioning, but patterns of change for specific aspects of mental health differed. The most marked alterations were observed for positive emotions such that we saw continuous declines from the start to the end of the mission, without evidence of a 'bounce-back' effect as participants were preparing to return home," reports Alfano.



# The immune link between a leaky blood-brain barrier and schizophrenia

Like a stern body guard for the central nervous system, the blood-brain barrier keeps out anything that could lead to disease and dangerous inflammation -- at least when all is functioning normally.

That may not be the case in people with schizophrenia and other mental disorders, suggest new findings from a team led by researchers from the School of Veterinary Medicine, Perelman School of Medicine, and Children's Hospital of Philadelphia (CHOP). In these individuals, a more permissive barrier appears to allow the immune system to get improperly involved in the central nervous system, the researchers

showed. The inflammation that arises likely contributes to the clinical manifestations of neuropsychiatric conditions.

"Our hypothesis was that, if the immune function of the blood-brain barrier is compromised, the resulting inflammation will have an impact on the central nervous system," says Jorge Iván Alvarez, an assistant professor at Penn Vet and senior author on the work, published in the journal *Brain*. "With that in mind, we think these findings could also be used to understand how the blood-brain barrier and neurological processes impact not only schizophrenia but mental disorders at large."

The research team pursued the study focused on a rare condition called 22q11.2 deletion syndrome (22qDS), in which people are born missing a small portion of DNA from chromosome 22. Roughly a quarter of people with this syndrome go on to develop schizophrenia. Penn and CHOP have a community of researchers who study the condition, often as a way of probing deeper into the mysteries of schizophrenia.

This disorder had not been a focus for the Alvarez lab, however, until he gave a talk at CHOP on his area of expertise -- the blood-brain barrier -- and was approached by an attendee afterward.

"We started

talking about the fact that, in this deletion syndrome, one of the missing genes is very important for blood-brain barrier function," Alvarez says.

That attendee, Stewart Anderson of CHOP, had been studying 22qDS, and together he and Alvarez began collaborating to evaluate whether the blood-brain barrier and its effect on the immune system were playing a role in the condition.

As a first step, the group used a technique whereby stem cells from 22qDS patients diagnosed with schizophrenia, as well as healthy controls, are coaxed to develop into blood-brain barrier endothelial cells, the cells that form a tight-

ly regulated "wall." In experiments led by Vet School doctoral student Alexis Crockett, they found that the barrier function in cells derived from 22qDS patients was more impaired than those derived from the healthy controls, which were more restrictive. They confirmed these findings in mice bred to have a version of 22qDS, finding that their blood-brain barrier was likewise leaky compared to normal mice.

To see if 22qDS compromised this immune privilege, the researchers again looked to patient stem cells induced to grow into blood-brain barrier cells and to their mouse model. In both cases, they observed impairments in the immune privilege properties of the barrier, with more immune cells and pro-inflammatory molecules able to cross it.

The brain is typically considered "immune privileged," meaning that the surveillance carried out by immune cells and immune mediators on the central nervous system is not only regulated by the physical blockade

of the blood-brain barrier but also by endothelial cells making the barrier express lower levels of immune signaling molecules.

To see if 22qDS compromised this immune privilege, the researchers again looked to patient stem cells induced to grow into blood-brain barrier cells and to their mouse model. In both cases, they observed impairments in the immune privilege properties of the barrier, with more immune cells and pro-inflammatory molecules able to cross it.

As a final validation of their findings, the researchers examined post-mortem brain tissue from three 22qDS patients and three controls.

## 'Information theory' recruited to help scientists find cancer genes

Using a widely known field of mathematics designed mainly to study how digital and other forms of information are measured, stored and shared, scientists at Johns Hopkins Medicine and Johns Hopkins Kimmel Cancer Center say they have uncovered a likely key genetic culprit in the development of acute lymphoblastic leukemia (ALL).

ALL is the most common form of childhood leukemia, striking an estimated 3,000 children and teens each year in the United States alone.

Specifically, the Johns Hopkins team

used "information theory," applying an analysis that relies on strings of zeros and ones — the binary system of symbols common to computer languages and codes — to identify variables or outcomes of a particular process. In the case of human cancer biology, the scientists focused on a chemical process in cells called DNA methylation, in which certain chemical groups attach to areas of genes that guide genes on/off switches.

This study demonstrates how a mathematical language of cancer can help us understand how cells

are supposed to behave and how alterations in that behavior affect our health," says Andrew Feinberg, M.D., M.P.H., Bloomberg Distinguished Professor at the Johns Hopkins University School of Medicine, Whiting School of Engineering and Bloomberg School of Public Health. A founder of the field of cancer epigenetics, Feinberg discovered altered DNA methylation in cancer in the 1980s.

Feinberg and his team say that using information theory to find cancer driver genes may be applicable to a wide variety of cancers and other diseases.

## Food allergies, changes to infant gut bacteria linked to method of childbirth, ethnicity

Researchers have found a causal link between cesarean section birth, low intestinal peanut sensitivity in infants, and they report the effect is more pronounced in children of Asian descent than others, in a recently published paper in the journal of the American Gastroenterological Association.

"It's important to know what predicts or increases risk of food sensitivities because they predict which infants will go on to develop asthma and other types of allergies," said Anita Kozyrskyj, pediatric professor in the University of Alberta's Faculty of Medicine & Dentistry and adjunct professor in the School of Public Health.

The research team analysed the gut bacteria of 1,422 infants in the CHILD Cohort Study, by examining

focal samples collected at three or four months of age and again at one year. They identified four typical trajectories for bacterial development, including one in which the infants had persistently low levels of *Bacteroides*, a type of bacteria known to be critical to immune system development. This profile was most common in babies born by caesarean section.

The infants were given skin prick tests at one and three years of age to assess their reaction to a variety of allergens, including egg, milk and peanut. The babies with low *Bacteroides* levels were found to have a three-fold increase in their risk of developing a peanut sensitivity by age three — and the risk was eight times higher for babies born to mothers of Asian descent.

The team did further statistical analysis to look for what are known as "mediational" or causal effects between the exposure and the outcome. "In this case we observed that there was an association between Asian ethnicity and peanut sensitivity, and then the mediation analysis provided additional evidence for the causal association with caesarean section," explained Kozyrskyj, noting it is the first study to identify this link. The researchers also observed that the infants with low *Bacteroides* also had lower levels of sphingolipids, proteins which are key to cell development and signalling in many parts of the body, including the immune system. Gut microbiota are the main source of these proteins.