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

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

3 high-value drug suspects yield P36-M shabu in Bacoor

Authorities have seized more than PHP36 million worth of shabu and arrested three high-value targets in Bacoor City, Cavite last Nov. 2 evening.

In a message to reporters last Nov. 3, Quezon City Police District (QCPD) Director, Brig. Gen. Ronnie Montejo, identified the suspects as Anabel Natividad, a.k.a. Anabel Mayol, 52; Teresita Dizon, 52; and Rina Aguilon, 43; all from Barangay Molino III, Bacoor City.

The suspects were arrested in a buy-bust operation conducted

Turn to page 2

(Photo courtesy of Cavite Police Provincial Office)

(Photo courtesy of Imus BFP via Imus Mayor Emmanuel Maliksi)

Fire hits residential area in Bacoor

A fire broke out at a residential area in Barangay Tinargohanan, Bacoor City, Cavite, Nov. 1 night.

The blaze reached fourth alarm.

As of 1:21 am last Nov. 2, the fire was declared under control.

DIYARYO KABITENYO

ARNULFO BARCO
Publisher - Editor

GENER BARCO
Operations Manager

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(3... from page 1)

by operatives of the Station Drug Enforcement Unit (SDEU) of the Cabuyao Police Station and local police in coordination with the National Operations Center of the Philippine Drug Enforcement Agency (PDEA) at around 10:45 p.m. last Nov. 2 at Block 4, Lot 8, Carsen Camilla in Barangay Molino III.

An undercover cop posed as a poseur buyer and bought PHP245,000 worth of shabu from the suspects that resulted in their arrest.

Meanwhile, one of their cohorts identified as Raffy Aguilon evaded arrest during the operation.

The suspects yielded buy-bust money and the five kilograms of shabu worth PHP36 million and a Ford Raptor with plate number NFW-3283.

The three suspects will be facing charges in violation of Republic Act 9165 or the Comprehensive Dangerous Drugs Act of 2002.

Mamaje commended the operatives for their relentless anti-illegal drug operations resulting in the arrest of the suspects and confiscation of the illegal drugs. (PNA)

Europe took center-stage in global spread of the coronavirus, says new research

A collaboration between genome researchers at the University of Huddersfield and Portugal's University of Minho has led to one of the largest analyses of its kind focusing on thousands of virus genomes sampled from all around the world.

The University of Huddersfield's Archaeogenetics Research Group has mapped out the dispersal of the SARS-CoV-2 coronavirus, responsible for the current worldwide COVID-19 pandemic, putting Europe centre-stage as the main source of the spread.

The group's findings, recently published in a special issue of the peer-reviewed journal Microorganisms, confirm that the virus originated in China and most likely jumped into humans from horseshoe bats. But that it is Europe, not China, which has been the main source for spreading the disease around the world.

The research also suggests that travel restrictions across Britain and Europe seem to have been too little and too late and that the actual spread of the virus to America and other parts of the world was largely via Europe, and not directly from China.

The study focused on 27,000 virus genomes, sampled from all around the world. The researchers usually work on tracking ancient human migrations using mitochondrial DNA, and they capitalised on the fact that the virus genome is similar in crucial respects.

Still, the mammoth size of the dataset, even back in May when the study began, makes this one of the biggest analyses of its kind ever undertaken.

The intensive data analyses were carried out by clinical geneticist Dr Teresa Rito and evolutionary geneticist Dr Pedro Soares. Both are based at the University of Minho in Portugal and have worked closely with the University of Huddersfield's Professor Martin Richards and Dr Maria Pala, as part of the Archaeogenetics Research Group, on many occasions. The pair called upon the knowledge and expertise of their colleagues in the UK to help make sense of the data and publish their conclusions in double-quick time.

Professor Richards explained how there is a huge ongoing worldwide effort to understand the spread of the coronavirus and that researchers are trying to make their work available to the public as fast as possible.

As the world continues to face a rapidly spreading pathogen, Dr Pala believes a greater understanding of the virus will better inform and improve upon policies designed to control the spread.

"With thousands of lives still at risk," added Dr Pala, "the need for scientific research is now more crucial than ever."

Republic of the Philippines
Fourth Judicial Region
REGIONAL TRIAL COURT
OFFICE OF THE CLERK OF COURT
City of Bacoor

HOME DEVELOPMENT MUTUAL FUND,
Mortgagee,

- versus -

Foreclosure No. 2020-43
For: Extra-Judicial Foreclosure of Real Estate Mortgage

LUISITO G. OCRETO married to LEONORA B. OCRETO,
Mortgagors.

x---x

NOTICE OF EXTRA-JUDICIAL FORECLOSURE

Upon Extra-judicial Petition for Sale under Act 3135 as Amended by Act 4118 filed by the mortgagee, **HOME DEVELOPMENT MUTUAL FUND,** of 12th Floor JELP Business Solutions Center, No. 409 Shaw Boulevard, Mandaluyong City and against the mortgagors, **LUISITO G. OCRETO married to LEONORA B. OCRETO,** of 0605 Capa St., Guadalupe Nuevo, Makati City, to satisfy the mortgage indebtedness which as of February 28, 2020, amounts to **SIX HUNDRED FORTY TWO THOUSAND SEVEN HUNDRED NINETY ONE PESOS & 24/100 (P642,791.24),** Philippine Currency, inclusive of interest, penalties and other charges, the undersigned or her duly authorized representative will sell at the public auction on **December 14, 2020** at 10:00 o'clock in the morning or soon thereafter, at the main entrance of the Hall of Justice of Bacoor City, Cavite, to the highest bidder for CASH and in Philippine Currency, the following described property with all the improvements thereon, to wit:

TRANSFER CERTIFICATE OF TITLE NO. T-137962

"A parcel of Land (Lot 17 Blk. 14 of the subd. Plan, Psd-04-[illegible], being a portion of Lot 4782-B-1, (LRC) Psd-[illegible] L.R.C. Rec. No. [illegible]), situated in the Bo. of Mambog, Mun. of Bacoor, Province of Cavite, Is. of Luzon. x x x containing an area of THIRTY SIX (36) SQUARE METERS," more or less.

"All sealed bid must be submitted to the undersigned on the above stated time and date."

"In the event the public auction should not take place on the said date, it shall be held on **December 21, 2020**, without further notice."

Prospective buyers or bidders are hereby enjoined to investigate for themselves the title to the said property and encumbrances, if any there be.

City of Bacoor, October 12, 2020.

(Sgd.) **LIZA D. YIC'TA**
Clerk of Court VI

By:

(Sgd.) **ARTHUR T. SAN MIGUEL**
Sheriff

Copy Furnished:

HOME DEVELOPMENT MUTUAL FUND
12th Floor JELP Business Solutions Center,
No. 409 Shaw Boulevard, Mandaluyong City

ATTY. MICHAEL YANCY VNGSON
Unit C 18th Floor, [illegible] 2000 Building, Emerald Avenue,
Ortigas Center, Pasig City

Mr. & Mrs. LUISITO G. OCRETO and LEONORA B. OCRETO,
No. 605 Capa St., Guadalupe Nuevo, Makati City

WARNING: It is absolutely prohibited to remove, deface or destroy this notice of Extra-judicial Sale on or before the date of sale.

Publication : DIYARYO KABITENYO
Dates : October 26, November 2 & 9, 2020

DEED OF SELF-ADJUDICATION

NOTICE is hereby given that the estate of the late **SPOUSES ESPERANZA PRODIGALIDAD CASTRO and CELEDONIO CASTRO** who both died intestate on June 28, 2020 in Cavite City, Philippines and on March 13, 2014 at Santa Clara, California, USA, respectively, consisting of two (2) parcels of land located at Cavite City and Trece Martires City, Cavite and covered by Transfer Certificate of Title No. T-[illegible] of the Registry of Deeds of Cavite City and Transfer Certificate of Title No. T-72686 of the Register of Deeds of Trece Martires City with all the improvements erected thereon, more particularly described as follows:

TRANSFER CERTIFICATE OF TITLE NO. T-[illegible]

A parcel of land situated in the Dist. of Caridad, Cavite City, containing an area of FOUR HUNDRED NINETY SEVEN (497) SQUARE METERS, more or less.

TAX DECLARATION NO. 01-638A-00084

Two Storey building, Type III-B (1) wood with a Floor Area One Hundred Twenty Eight (128) Square meters.

TRANSFER CERTIFICATE OF TITLE NO. T-72686

A parcel of land situated in the Bo. of San Agustin, City of Trece Martires, Is. of Luzon, containing an area of ONE THOUSAND (1,000) SQ. METERS, more or less,

has been self-adjudicated by the sole heir ANNABELLE CASTRO ROSA on October 21, 2020 in the City of Cavite, Philippines before Notary Public Atty. Antonio B. Cabano and entered in her Notarial Register as Doc. No. 198; Page No. 41; Book No. LXI; Series of 2020.

(Sgd.) **Affiant/heir**

Publication : DIYARYO KABITENYO
Dates : October 26, November 2 & 9, 2020

DEED OF SELF-ADJUDICATION

NOTICE is hereby given that the estate of the late **ESPERANZA PRODIGALIDAD CASTRO** who died intestate on June 28, 2020 in Cavite City, Philippines, consisting of cash deposited with the Bank of the Philippine Islands (BPI) Cavite City Branch as follows:

Peso Passbook Savings Account No.	4713-1158-41	P3,108.36
USD Savings Account No.	4714-0046-48	$18,309.73

has been self-adjudicated by her sole heir ANNABELLE CASTRO ROSA on October 21, 2020 in the City of Cavite, Philippines before Notary Public Atty. Antonio B. Cabano and entered in her Notarial Register as Doc. No. 123; Page No. 25; Book No. LXI; Series of 2020.

(Sgd.) **Affiant/heir**

Publication : DIYARYO KABITENYO
Dates : October 26, November 2 & 9, 2020

REPUBLIC OF THE PHILIPPINES
PROVINCE OF CAVITE
MUNICIPALITY OF NAIC

NOTICE TO THE PUBLIC

CCE-0040-2020 R.A. 10172

In compliance with the publication requirement 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 **BONIFACIO PACHON GONZALES** has filed with this Office, a petition for correction of entry in **date of birth** from **"DECEMBER 3, 1989" to "NOVEMBER 30, 1994"**.

Any person adversely affected by said petition, may file his written opposition with this Office not later than **November 16, 2020.**

(Sgd.) **GLORIA P. BAGO**
Municipal Civil Registrar

DIYARYO KABITENYO - November 2 & 9, 2020

REPUBLIC OF THE PHILIPPINES
PROVINCE OF CAVITE
MUNICIPALITY OF NAIC

NOTICE TO THE PUBLIC

CCE-0039-2020 R.A. 10172

In compliance with the publication requirement 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 **MYRA DELACRUZ GONZALES** has filed with this Office, a petition for correction of entry in **date of birth** from **"October 5, 1961" to "MAY 5, 1961"**.

Any person adversely affected by said petition, may file his written opposition with this Office not later than **November 16, 2020.**

(Sgd.) **GLORIA P. BAGO**
Municipal Civil Registrar

DIYARYO KABITENYO - November 2 & 9, 2020

EXTRAJUDICIAL SETTLEMENT OF ESTATE OF THE DECEASED NATIVIDAD ORDOÑEZ GELERA WITH WAIVER OF RIGHTS

NOTICE is hereby given that the estate of the late **NATIVIDAD ORDOÑEZ GELERA** who died intestate on October 23, 2018 at Imus City, Cavite, consisting of a tricycle with line/franchise described as follows:

Make/Series	HONDA/TMX155
Body Type	Motorcycle
Chassis No.	KB159C223647
Motor/Engine No.	KB0[illegible]223651
Plate No.	7532DW
CR No.	12498158-2

CERT. OF FRANCHISE NO. 2019-01078 (TRU-Imus)

has been adjudicated and extrajudicially settled by and between her heirs with waiver of rights and interest in favor of ALVARO D. GELERA on July 27, 2020 at City of Imus, Cavite before Notary Public Atty. Carlos Emmanuel C. Montoya and entered in his Notarial Register as Doc. No. 78; Page No. 16; Book No. XXXIII; Series of 2020.

(Sgd.) **ALVARO O. GELERA and RINA O. GELERA LAGMAN (represented by her Attorney-in-fact MABEL B. GELERA)**

Publication : DIYARYO KABITENYO
Dates : November 2, 9 & 16, 2020

EXTRAJUDICIAL SETTLEMENT OF ESTATE With WAIVER OF RIGHTS

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 a parcel of land situated in the Brgy. of Calubcub, Mun. of Naic, Prov. of Cavite, covered by TCT No. T-[illegible], containing an area of FOUR HUNDRED SIXTY THREE (463) SQUARE METERS has been adjudicated and extrajudicially settled by and between her heirs with waiver of interest, rights and participation in the above described property in favor of ALLEN SISAYAN GENOVA on August 25, 2020 at Cavite City before Notary Public Atty. [illegible] Y. Agbuang and entered in her Notarial Register as Doc. No. 1673; Page No. 94; Book No. 6; Series of 2020.

(Sgd.) **Both Heirs**

Publication : DIYARYO KABITENYO
Dates : November 2, 9 & 16, 2020

EXTRAJUDICIAL SETTLEMENT OF ESTATE

NOTICE is hereby given that the estate of the late **VINCENT JOHN ENCIRANES GRECIA** who died intestate on September 7, 2018 at Gen. Trias Doctors Medical Center, Brgy. Manggahan, City of Gen. Trias, Cavite, consisting of a parcel of land with improvement found thereon, situated in the Brgy. of San Juan, Mun. of Gen. Trias, Prov. of Cavite, covered by TCT No. T-057-2019004998, containing an area of SIXTY (60) SQ. METERS, more or less, has been adjudicated and extrajudicially settled by and among his heirs in equal shares on October 6, 2020 at Cavite City before Notary Public Atty. Silver V. Agbuya and entered in her Notarial Register as Doc. No. 1219; Page No. 18; Book No. 3; Series of 2020.

(Sgd.) **Ruth Soliva**

Publication: DIYARYO KABITENYO
Dates: November 2, 9 & 16, 2020

ERRATUM

As per Second Notice of Extra-Judicial Foreclosure of Real Estate Mortgage filed by **HOME DEVELOPMENT MUTUAL FUND** against **NOEL F. DOCOG, SR.** in Foreclosure No. 2020-09 published in the three (3) consecutive issues of **DIYARYO KABITENYO** dated October 9-11, 2020, October 12-18, 2020 and October 19-25, 2020, the title of the mortgage property with all the improvements thereon should have read: **TRANSFER CERTIFICATE OF TITLE NO. T-1035890.** – **The Editor**

ERRATUM

As per Notice of Extrajudicial Foreclosure of Real Estate Mortgage filed by **HOME DEVELOPMENT MUTUAL FUND** against **ALEX B. BASINANG married to CORAZON BIGCAS BASINANG REPRESENTED BY MARY GLEN B. BASINANG** in Eff NO. **TG-20-008** published in the three (3) consecutive issues of **DIYARYO KABITENYO** dated September 7-13, 2020, September 14-20, 2020 and September 21-27, 2020, the title of the mortgage property with all the improvements thereon should have consistently read: **TRANSFER CERTIFICATE OF TITLE NO. 070-2017006321.** – **The Editor**

Venous origin of brain blood-vessel malformations

In the condition known as cavernoma, lesions arise in a cluster of blood vessels in the brain, spinal cord or retina. Researchers from Uppsala University can now show, at molecular level, that these changes originate in vein cells. This new knowledge of the condition creates potential for developing better therapies for patients. The study has been published in the journal eLife.

The vascular lesions, or blood-vessel malformations, that appear in a cerebral cavernoma – also known as a cerebral cavernous malformation (CCM) or, in the US, cavernous angioma – resemble mulberries. They bleed easily, which may cause epileptic attack, neurological problems and stroke. The condition is due to genetic mutations that may be inherited or occur spontaneously and is incurable at present. Surgery is an option but, in patients with the hereditary form in whom new CCMs arise constantly, only a temporary solution.

How, and in which kind of blood vessel, the mutations occur has not been entirely clarified to date. In the present study, the researchers at Uppsala University – in collaboration with IFOM, the FIRC Institute of Molecular Oncology, and the Mario Negri Institute of Pharmacological Research in Italy – investigated endothelial cells.

Tracking flight trajectory of evaporating cough droplets

The ongoing COVID-19 pandemic has led many researchers to study airborne droplet transmission in different conditions and environments. In a new paper in Physics of Fluids, by AIP Publishing, researchers from A*STAR's Institute of High Performance Computing conducted a numerical study on droplet dispersion using high fidelity air flow simulation. The scientists found a single 100-micrometer cough droplet under wind speed of 2 meters per second can travel up to 6.6 meters and even further under dry air conditions due to droplet evaporation.

"In addition to wearing a mask, we found social distancing to be generally effective, as droplet deposition is shown to be reduced on a person who is at least 1 meter from the cough," said author Fong Yew Leong.

The researchers used computational tools to solve complex mathematical formulations representing air flow and the airborne cough droplets around human bodies at various wind speeds and when impacted by other environmental factors. They also assessed the deposition profile on a person at a certain proximity.

A typical cough emits thousands of droplets across a wide size range. The scientists found large droplets settled on the ground quickly due to gravity but could be projected 1 meter by the cough jet even without wind. Medium-sized droplets could evaporate into smaller droplets, which are lighter and more easily borne by the wind, and these traveled further.

The researchers offer a more detailed picture of droplet dispersion as they incorporated the biological considerations of the virus, such as the nonvolatile content in droplet evaporation, into the modelling of the airborne dispersion of droplets.

"An evaporating droplet retains the nonvolatile viral content, so the viral loading is effectively increased," said author Hongying Li.

The latest studies are starting to incorporate important aspects of fluid physics to deepen our understanding of virus transmission in different conditions and environments.

Scientists use clues in the human genome to discover new inflammatory syndrome

Researchers from the National Institutes of Health (NIH) have discovered a new inflammatory disorder called vacuoles, E1 enzyme, X-linked, autoinflammatory and somatic syndrome (VEXAS), which is caused by mutations in the UBA1 gene. VEXAS causes symptoms that included blood clots in veins, recurrent fevers, pulmonary abnormalities and vacuoles (unusual cavity-like structures) in myeloid cells. The scientists reported their findings in the New England Journal of Medicine.

Nearly 125 million people in the U.S. live with some form of a chronic inflammatory disease. Many of these diseases have overlapping symptoms, which often make it difficult for researchers to diagnose the specific inflammatory disease in a given patient.

Researchers at the National Human Genome Research Institute (NHGRI), part of the NIH, and collaborators from other NIH Institutes took a unique approach in address this challenge. They studied the genome sequences from more than 2,500 individuals with undiagnosed inflammatory diseases, paying particular attention to a set of over 800 genes related to the process of ubiquitylation, which helps regulate both various protein functions inside a cell and the immune system overall. By doing so, they found a gene that is intricately linked to VEXAS, a disease that can be life-threatening. So far, 40% of VEXAS patients who the team studied have died, revealing the devastating consequences of the severe condition.

Usually, researchers discover a previously unknown disease by studying several patients with similar symptoms, then searching for a gene or multiple genes that may play a role in causing the disease. However, this was not a viable option for the NIH research team.

"We had many patients with undiagnosed inflammatory conditions who were coming to the NIH Clinical Center, and we were just unable to diagnose them," said David B. Beck, M.D., Ph.D., clinical fellow at NHGRI and lead author of the paper. "That's when we had the idea of doing it the opposite way. Instead of starting with symptoms, start with a list of genes. Then, study the genomes of undiagnosed individuals and see where it takes us."

Out of the genome sequences of 2,560 patients with undiagnosed inflammatory conditions, over 1,000 patients had undiagnosed recurrent fevers and body-wide inflammation. The rest, part of the NIH Undiagnosed Diseases Network, had unusual and unclassified disorders.

"Our objective was to see if any of the 2,560 patients shared variations in the same gene," said Daniel Kastner, M.D., Ph.D., scientific director of the Intramural Research Program at NHGRI and a senior author of the paper. "Instead of looking at clinical similarities, we were instead taking advantage of shared genomic similarities that could help us discover a completely new disease."

Out of the 800 genes, one stood out. Three middle-aged males had rare and potentially damaging genomic variants in the UBA1 gene, but each of the three males appeared to have two copies of the UBA1 gene with one copy harboring the mutation, which was not unexpected because humans usually have two copies of every gene. However, the UBA1 gene resides in the X chromosome, and males have only one X chromosome (and one Y chromosome).

"We were amazed to see this and wondered what it could mean. And that's when it clicked — this was only possible if there was mosaicism in these men," said Dr. Beck.

Mosaicism occurs when some people have groups of cells with mutations that are different from the rest of the body. The team predicted that there were specific cells in the patients' bodies that carried the UBA1 gene in its normal form while other cells carried the gene in its mutated form.

Study uncovers subset of COVID-19 patients who recover quickly and sustain antibodies

One of the pressing questions about COVID-19 remains: How long does immunity last? One key indicator of immunity is the presence of virus-specific antibodies. Previous studies have provided conflicting accounts about whether people who have recovered from infection can sustain potentially protective antibodies or not.

A new study led by investigators from Brigham and Women's Hospital examined blood samples and cells from patients who had recovered from mild to moderate COVID-19 and found that while antibodies against the virus declined in most individuals after disease resolution, a subset of patients sustained anti-virus antibody production several months following infection. These antibody "sustainers" had a shorter course of symptoms, suggesting that some individuals who recover from COVID-19 faster may be mounting a more effective and durable immune response to the virus. Results are published in Cell.

"We've found a subset of individuals that fend quickly while maintaining virus-specific antibody levels after COVID-19," said Duane Wesemann, MD, PhD, an immunologist and associate physician in the Brigham Division of Allergy and Clinical Immunology and an associate professor at Harvard Medical School. "The kind of immune response we're seeing in these individuals is a lot like investing in an insurance policy – it's the immune system's way of adding a potential layer of protection against future encounters with the virus."

The Wesemann lab studies the entire set of antibodies a host's immune system produces and how they learn to recognize particular. In the spring of 2020, the team turned its attention to the COVID-19 pandemic and the immune response of people who become infected. They are eager to understand the nature of the antibody response to the virus. To this end, the team recruited and enrolled 92 people in the Boston area who had recovered from COVID-19 between March and June of 2020. Five of the individuals were hospitalized but all others recovered at home. The team collected and analyzed blood samples monthly, measuring a range of antibodies, including immunoglobulin-G (IgG), against the virus that causes COVID-19.

Aerosol microdroplets inefficient carriers of COVID-19 virus

Aerosol microdroplets, the tiny particles that linger in the air longest after we talk, cough, or sneeze, do not appear to be extremely efficient at spreading the virus that leads to COVID-19.

Modeling of SARS-CoV-2 transmission in confined spaces suggests aerosol transmission is not a very efficient route. The results were published in Physics of Fluids, by AIP Publishing.

Physicists and medical doctors at the University of Amsterdam's Van der Waals-Zeeman Institute used laser technology to measure the distribution of droplets released when people speak or cough. Test subjects spoke or coughed into a laser beam, and a jet nozzle was used to mimic the aerosol exhalations.

This allowed researchers to measure how droplets spread and how likely they are to pass along SARS-CoV2.

While the lingering microdroplets are certainly not risk-free, due to their small size they contain less virus than the larger droplets that are produced when someone coughs, speaks, or sneezes directly on us, said Daniel Bonn, one of the authors and institute director.

"Based on the current insights, we actually see that aerosol transmission is relatively safe to go into well-ventilated modern buildings, such as airports, train stations, modern offices, etc.," Bonn said. "Modern ventilation makes the aerosol infection risk not very large.

The amount of virus in the small droplets is relatively small, meaning that it becomes dangerous if you're in a badly ventilated room for a relatively long time with an infected person or after an infected person has coughed there."

Turbulent era sparked leap in human behavior, adaptability 320,000 years ago

For hundreds of thousands of years, early humans in the East African Rift Valley could expect certain things of their environment. Freshwater lakes in the region ensured a reliable source of water, and large grazing herbivores roamed the grasslands. Then, around 400,000 years ago, things changed. The environment became less predictable, and human ancestors faced new sources of instability and uncertainty that challenged their previous long-standing way of life.

The first analysis of a new sedimentary drill core representing 1 million years of environmental history in the East African Rift Valley shows that at the same time early humans were abandoning old tools in favor of more sophisticated technology and broadening their trade networks, their landscape was experiencing frequent fluctuations in vegetation and water supply that made resources less reliably available. The findings suggest that instability in their surrounding climate, land and ecosystem was a key driver in the development of new traits and behaviors underpinning human adaptability.

In the Oct. 21 issue of the journal Science Advances, an interdisciplinary team of scientists led by Richard Potts, director of the Human Origins Program at the Smithsonian's National Museum of Natural History, describes the prolonged period of instability across the landscape in this part of Africa (now Kenya) that occurred at the same time humans in the region were undergoing a major behavioral and cultural shift in their evolution.

Potts and colleagues documented this behavioral and cultural shift in 2018 based on artifacts recovered at an archaeological site known as Olorgesailie. Decades of study at Olorgesailie by Potts' team and collaborators at the National Museums of Kenya have determined that early humans at Olorgesailie relied on the same tools, stone handaxes, for 200,000 years. Their way of life during this period was remarkably stable, with no major changes in their behaviors and strategies for survival. Then, beginning around 320,000 years ago, people living there entered the Middle Stone Age, crafting smaller, more sophisticated weapons, including projectiles. At the same time, they began to trade resources with distant groups and to use coloring materials, suggesting symbolic communication. All these changes were a significant departure from their previous lifestyle, likely helping early humans cope with their newly variable landscape, Potts said.

"The history of human evolution has been one of increasing adaptability," Potts said. "We come from a family tree that's diverse, but all of those other ways of being human are now extinct. There's only one of us left, and we may well be the most adaptable species that may have ever existed on the face of the Earth."

While some scientists have proposed that climate fluctuations alone may have driven humans to evolve this remarkable quality of adaptability, the new study indicates the picture is more complicated than that. Instead, the team's analysis show that climate variability is but one of several intertwined environmental factors that drove the cultural shift they described in 2018. The new analysis reveals how a changing climate along with new land faults introduced by tectonic activity and ecological disruptions in the vegetation and fauna all came together to drive disruptions that made technological innovation, trading resources and symbolic communication — three key factors in adaptability — beneficial for early humans in this region.

In seeking to understand the major evolutionary transition they had uncovered at Olorgesailie, Potts and his team had been frustrated by a large gap in the region's environmental record. Erosion at Olorgesailie, a hilly area full of sedimentary outcrops, had removed the geologic layers representing some 180,000 years of time at exactly the period of this evolutionary transition. To learn about how the region changed during that period, they had to look elsewhere.

They arranged to have a Nairobi company drill in the nearby Koora basin, extracting sediment from as deep into the earth as they could. The drill site, about 15 miles from the archaeological dig sites, was a flat, grassy plain, and the team had no clear idea what was beneath its surface.

DIYARYO
KABITENYO
Nagmamalasakit sa lalawigan

Vol. 23 No. 38 November 9-15, 2020 P 15.00

A drop in temperature

In the nearly two centuries since German physician Carl Wunderlich established 98.6°F as the standard "normal" body temperature, it has been used by parents and doctors alike as the measure by which fevers — and often the severity of illness — have been assessed.

Over time, however, and in more recent years, lower body temperatures have been widely reported in healthy adults. A 2017 study among 35,000 adults in the United Kingdom found average body temperature to be lower (97.5°F), and a 2019 study showed that the normal body temperature in Americans (those in Palo Alto, California, anyway) is about 97.5°F.

A multinational team of physicians, anthropologists and local researchers led by Michael Gurven, UC Santa Barbara professor of anthropology and chair of the campus's Integrative Anthropological Sciences Unit, and Thomas Kraft, a postdoctoral researcher in the same department, have found a similar decrease among the Tsimane, an indigenous population of forager-horticulturists in the Bolivian Amazon. In the 16 years since Gurven, co-director of the Tsimane Health and Life History Project, and fellow researchers have been studying the population, they have observed a rapid decline in average body temperature — 0.09°F per year, such that today Tsimane body temperatures are roughly 97.7°F.

"In less than two decades we're seeing about the same level of decline as that observed in the U.S. over approximately two centuries," said Gurven. Their analysis is based on a large sample of 18,000 observations of almost 5,500 adults, and adjust for multiple other factors that might affect body temperature, such as ambient temperature and body mass.

The anthropologists' research appears in the journal Science Advances.

Implantable device can monitor and treat heart disease

Pacemakers and other implantable cardiac devices used to monitor and treat arrhythmias and other heart problems have generally had one of two drawbacks — they are made with rigid materials that can't move to accommodate a beating heart, or they are made from soft materials that can collect only a limited amount of information.

Researchers led by a mechanical engineer from the University of Houston have reported in Nature Electronics a patch made from fully rubbery electronics that can be placed directly on the heart to collect electrophysiological activity, temperature, heartbeat and other indicators, all at the same time.

Cunjiang Yu, Bill D. Cook Assistant Professor of Mechanical Engineering at UH and corresponding author for the paper, said the device marks the first time bioelectronics have been developed based on fully rubbery electronic materials that are compatible with heart tissue, allowing the device to solve the limitations of previous cardiac implants, which are mainly made out of rigid electronic materials.