NISEB
NEWSLETTER/BULLETIN

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Society for Experimental Biology of Nigeria (NISEB)

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Thoughts on Performance Metrics in Science

Dr. D. O. Adetitun – Editor

In the days of Einstein, Pasteur, Leeuwenhoek, Archimedes, Robert Hooke, Koch, Watson and Crick, and other early scientists, discoveries were the hallmarks that made them known. They made discoveries that solved local, national and international problems. For instance, Louis Pasteur was a French chemist who discovered pasteurization process of preserving food. His discovery was a solution to the problem of wine spoilage at the time. He and many such scientists got recognized for solving problems. Pasteur also disproved the theory of spontaneous generation with his experiments using swan necked flasks. I am thinking again like done in Archimedes days. I think performance metrics in science should be based on useful, problem solving, scientific discoveries more than anything else. What do you think? Relax and digest this loaded NISEB newsletter/bulletin.

FROM THE PRESIDENT

I bring hearty greetings to all the distinguished members of our great Society. It is indeed a new year which has started with many activities and holding a lot of promises for us. Last December, we had our first ever national webinar with over 210 registrants and about 160 attendees. It was an informative and highly educative webinar. I am particularly grateful to our speakers (Dr. O. A. Adebesin and Prof. A. A. Toye). We hope to be able to provide a link to the recording of the webinar as soon as it is possible to do so. Furthermore, we have our eyes firmly set on this year's conference which would be coming up at the Mountain Top University. The Chairman of the Local Organizing Committee (Prof. G. O. Ajayi) and his team have been working assiduously to organize a befitting and content rich conference come August 30th – September 2nd, 2022. The first announcement will be circulated by the LOC in no distant time. I am delighted to inform us of the appointment of Dr. Omowumi Kayode (the Coordinator of MTU Branch and our Treasurer as the coordinator of NISEB quiz competition for undergraduates in Nigeria. The first edition will hold during the conference at MTU. Dr. Kayode is passionate about the quiz competition, and I am convinced that the competition would spread our tentacles to the young minds in our various tertiary institutions and it has the potentials to motivate them to join our society.

I want to use this opportunity to salute the efforts of all the founding fathers of the society. Many of them either have retired from active service or are preparing to do so. Valedictory programmes have been organized in their honours by the Faculty of Life Sciences, University of Ilorin. Likewise, the mentees of some of these distinguished academicians have put up special publications in their honours. We are certainly happy to have them around and I wish them long life and prosperity.

I encourage all of us to work together with me and the National Executive Committee as we strive to reposition the society. Your useful feedback is highly appreciated. I also encourage all the members to be up to date with their annual dues. I strongly believe that annual/memberships dues should be a yearly affair starting from January to December. We need not wait till the conference time before we fulfill our obligations to our societies. This is the standard practice globally.

Finally, I rejoice with all our members that have received promotions or appointments to various national and international positions. Likewise, I congratulate our members that delivered their inaugural lectures after the release of the last bulletin. We are proud of all your achievements. Please enjoy the contents of this bulletin.

THE TOP TEN SCIENTIFIC BREAKTHROUGHS OF 2021 THAT YOU SHOULD BE AWARE OF

Here are the top ten scientific breakthroughs of 2021 that you should be aware of

Covid-19 dominated science news in 2021 for good reason, and the following year is likely to be the same. However, the pandemic was not the only issue that science was dealing with in 2021. Many interesting and significant scientific breakthroughs occurred this year, many of which we will learn more about in the coming years. As we usher in the new year amid rising Omicron cases, let us take a look back and see how far science has progressed with these 10 science news and science breakthroughs of 2021

1 COVID-19 IMMUNIZATION

The development of the Covid-19 vaccines was actually part of the science news in 2020, but they were not released until 2021. Pfizer and Moderna Covid-19 vaccines were approved for emergency use in adults in record time last December, and Johnson & Johnson's single-shot vaccine will be available in February 2021. The Covid-19 vaccine is now available for children as young as five years old. Prior to this, the fastest vaccine development-to-deployment period was four years for the Mumps vaccine in the 1960s.

2 MALARIA VACCINE FOR CHILDREN

Malaria remains one of the most dangerous diseases on the planet, killing approximately 500,000 people each year. More than half are children under the age of five. In October, the World Health Organization (WHO) approved the world's first malaria vaccine for children, as well as the first vaccine against any parasitic disease. Mosquirix, the drug's brand name, has cost over USD 750 million to develop and test since 1987. The new vaccine, which fights the deadliest of five malaria pathogens, is administered in four injections. This scientific breakthrough has the potential to prevent approximately 5.3 million malaria cases each year.

3 THE JAMES WEBB TELESCOPE WAS LAUNCHED

In December, the James Webb Space Telescope, the largest and most powerful space telescope ever built, was launched. It will travel nearly 1 million miles in 30 days to a stable location in space, then spend another six months unfolding, aligning, and calibrating its instruments. NASA, the Canadian Space Agency, and the European Space Agency began work on the telescope in 1996, and it cost approximately USD 500 million. The launch was repeatedly postponed. It will track Earth's orbit around the sun for the next several decades. Previously unseen parts of the universe would now be visible, and it would be capable of performing tasks that the Hubble Space Telescope cannot. Humans will soon be able to see possible signs of life on other planets, observe star formation, and learn how early galaxies formed.

4 New Mars Discoveries

NASA's Perseverance lander
(photo: mars.nasa.gov)

In February 2021, three missions arrived on Mars, taking advantage of the Earth-Mars orbit alignment, which occurs once every 26 months. The Hope orbiter of the United Arab Emirates was designed to research Mars' history and present climate from orbit by tracking the Red Planet's daily, monthly, and yearly changes.

The Tianwen-1 spacecraft of the Chinese National Space Agency (CNSA) studied Mars' surface from orbit before landing the Zhurong rover in the huge Utopia Planitia. The idea was to see how well China could move around on Mars' surface. NASA's Perseverance lander, which is based on the Curiosity but has a suite of equipment for drilling and storing rock samples, will wander over Jezero Crater for the next few years.

It will gather up to 43 rock samples, which will be returned in caches as part of the Sample Return mission, which is still in the works. The test to see if we can fly through the Martian atmosphere is one of the most significant scientific breakthroughs on Mars.The Ingenuity Helicopter is a small drone-like rotocraft that came along with Perseverance as a technological demonstration mission. It has now traveled almost 2 kilometers. The Ingenuity Helicopter is assisting Perseverance's journey by scouting ahead and flagging potential hazards or objects of interest with its equipped camera.The United Arab Emirates learnt to orbit, China learned to land, and NASA learned to fly this year on Mars.

5 Closer than ever to finding ET

(screenshot from 'ET' movie)

In an August study, Cambridge researchers hypothesized on the possibility of a world that fits into the Hycean planet category and potentially host life.

They described a world about 2.6 times the size of Earth, with a hydrogen-rich atmosphere, a hot climate, and oceans.

Other creatures would be able to survive in such a world, but humans would not.

Because biosignatures from Hycean worlds (such as methyl chloride and dimethyl sulphide) are easier to detect than biosignatures from Earth-like planets (such as oxygen, methane, and so on), extraterrestrial life could be detected and confirmed in the next two or three tears.

6 Injection of CRISPR gene editing into the blood

The CRISPR Cas-9 gene editor was delivered directly into the bloodstream of a patient with a rare genetic condition in June 2021, demonstrating that the notion of gene editing is rapidly advancing.

Cells are usually taken from a patient and processed by CISPR in a lab setting before the altered genes are reintroduced into the body.

It is a time-consuming and costly procedure, and patients frequently require treatment thereafter.

This example of previously untreatable transthyretin amyloidosis was swift and successful, with a decrease in the harmful proteins that build up in the tissues and organs of someone suffering from the disease.

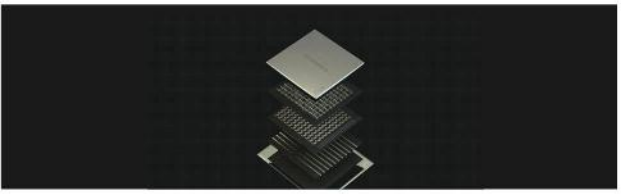
7 EARLY HUMAN SPECIES have been discovered in new locations

Homo longi or 'dragon man' (Photo: AFP)

A skull fossil was unearthed in China ninety years ago and concealed by a family until it was given to a university museum by a farmer in 2018. Researchers from China used uranium series dating and X-ray fluorescence to analyze the talent and designated it a new species of early humans. The skull possessed a massive cranium that could accommodate a huge brain, a thick brow, and nearly square eye sockets, which set it apart from other Homo species.

Homo longi, or 'dragon man,' was formerly thought to be a later Pleistocene human who lived alongside Homo sapiens and Neanderthals. However, the dispute over whether it should be classified as a distinct species continues, and we must wait for additional fossils to fill in the gaps in early human history. In a related 2021 scientific discovery, palaeontologists from Madrid constructed 3D-models of Neanderthal ear anatomy, claiming that they may have had the ability to speak and hear like Homo sapiens, the contemporary human species. As more data becomes available, our understanding of early human species is changing.

8 The Most Powerful Quantum Processor Available to Date



IBM's 127-qubit Eagle (Photo: newsroom.ibm.com)

Quantum computers can handle information in seconds that today's finest supercomputers would take days or weeks to process.

Quantum computers use quantum physics laws to provide amazing processing capabilities that have the potential to revolutionize meteorology, cybersecurity, industry, national defense, and many other fields.

IBM's 127-qubit Eagle will be released in November 2021. This quantum processor is the most powerful yet. Quantinum later released Quantum Origin, a cloud-based cybersecurity platform that was the world's first commercial quantum computing solution.

Quantum computing is on the verge of becoming a reality.

9 Humans have an impact on the evolution of animals

Tuskless elephants (Photo: AP)

Humans have had a direct and indirect impact on animal evolution. After years of hunting, studies have revealed a dramatic increase in tuskless African elephants. Because so many elephants with big tusks were killed by poachers during the Mozambican Civil War from 1977 to 1992, females with smaller tusks were more likely to pass on their genes.

Prior to the battle, approximately 20% of female elephants lacked tusks; currently, approximately half of female elephants lack tusks. Apart from killing animals, one of the indirect ways people influence animal evolution is through how they adapt with rising temperatures brought on by global warming. Bats have been getting wider wings, while rabbits have been growing longer ears, according to a study published in Trends in Ecology and Evolution. Both of these are expected to release more heat into the surrounding air. More evidence on these topics was provided in Science Advances. Over a 40-year period, 77 species of birds from a remote section of the Amazon rainforest were discovered to weigh less and had longer wings, most likely as a result of increased temperatures and changes in rainfall patterns.

10

The development of a titanium heart

Artificial titanium heart BiVACOR (photo: bivacor.com)

For more than 50 years, scientists have been attempting to create an artificial heart. Cardiovascular diseases (CVDs) claim the lives of an estimated 17.9 million people worldwide each year and are the leading cause of mortality.

BiVACOR, a titanium heart with spinning disc technology, was developed by an Australian research team.It doesn't work exactly like a human heart, but it aspires to outperform evolution by providing a better mechanism for pumping blood around the body. It has a titanium prosthetic heart with a circular pump hung between magnets. There has yet to be a complete human trial. It has only been tried on heart transplant patients for a short time and has gone through animal testing thus far.

1st NISEB National Quiz COMPETITION

The competition, organized by the Society for Experimental Biology of Nigeria (NISEB) will feature participant across Higher institutions within the six geopolitical zones in Nigeria. Undergraduate students from 300-400L in Biochemistry, Microbiology, Cell biology, Zoology, Animal science, Physiology and Plant/Crop science and all other related experimental biology Departments/programmes will be eligible to participate.

The competition billed to commence in May, 2022, and it will take place virtually and will be anchored by Dr. Omowumi Kayode (NEC executive) and all NISEB chapter coordinators. The six winners (2 candidates each per geopolitical zone) will represent their zone at the final competition which will take place during the 21 st NISEB conference coming up from August 29, 2022 to Sept 2, 2022 at Mountain Top University (MTU), Lagos.

A total of twelve students representing six geopolitical zones will compete for the first, second and third positions respectively. The institution that comes first will be awarded the trophy during the conference.

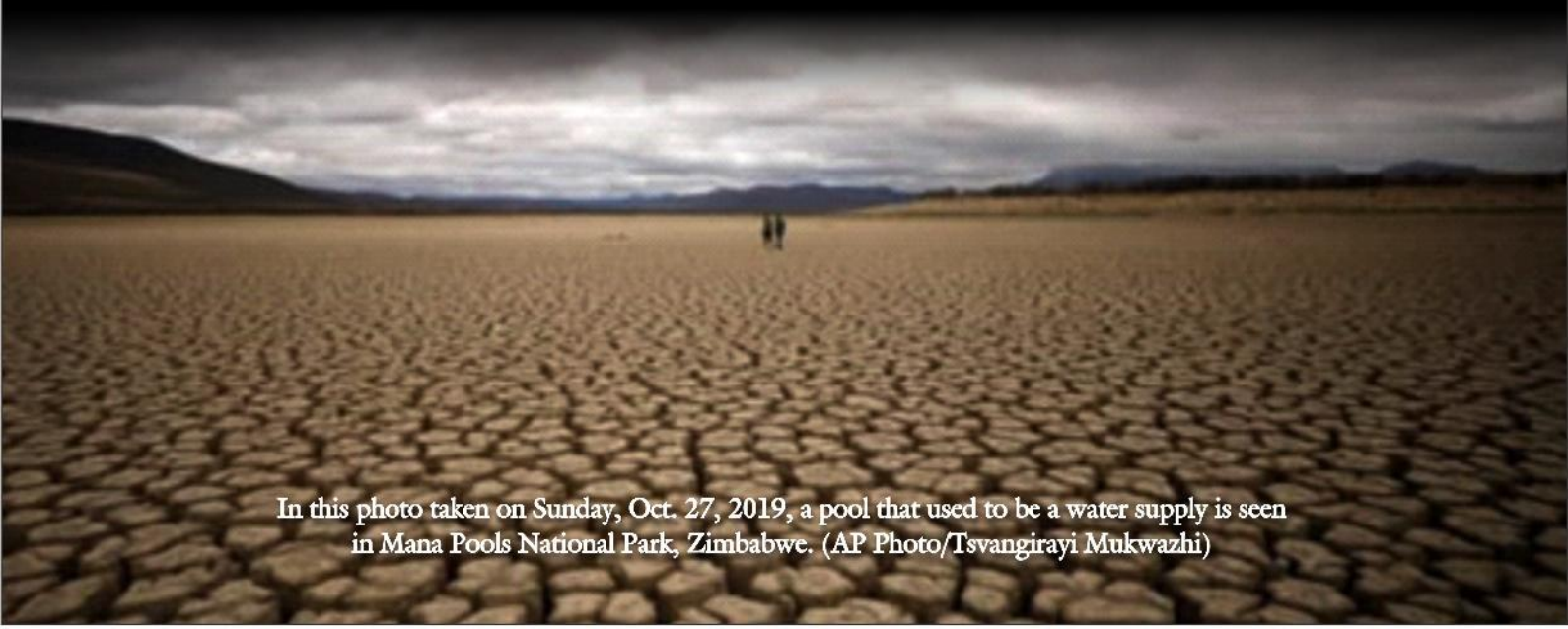
New Scientific Discoveries in 2020

Many of the world's leading scientists focused their attention on the new coronavirus in 2020. Their work yielded useful knowledge about the virus and led to the development of new vaccinations to combat it. However, there were other significant scientific breakthroughs in 2020. Here's a look back at some of the most important science news from the last year.

In this Wednesday, Nov. 6, 2019, image, plastic and other garbage floats in a collector of a new device that uses a curtain of tiny air bubbles to catch plastic floating in the capital's canals is seen in Amsterdam, Netherlands.

Bacteria that Consume Plastic

Researchers in Europe discovered a new bacterium that feeds on polyurethane, a type of plastic that is difficult to recycle or destroy. The discovery, made by a team from Germany's Helmholtz Center for Environmental Research, could help reduce a flood of hard-to-recycle plastics that are filling landfills and polluting the world's oceans. Many polyurethane-based products have the potential to release hazardous chemicals into the environment. However, the researchers discovered that the bacterium can produce enzymes that help break down the material.



In this photo taken on Sunday, Oct. 27, 2019, a pool that used to be a water supply is seen in Mana Pools National Park, Zimbabwe. (AP Photo/Tsvangirayi Mukwazhi)

By 2070, the heat will be "unlivable"

Researchers from the United States, China, and Europe have warned that as many as 3.5 billion people might face "near-unlivable" heat in the next 50 years.

According to a study, the excessive heat would be triggered by rising global temperatures caused by human-induced climate change. The actual number of individuals at risk will be determined by the ability to reduce pollution levels and the rate at which the global population grows.

The report projects that by 2070, roughly 3.5 billion people will be living in extremely hot locations, based on worst-case population growth and carbon pollution projections. That's one-third of the expected global population.

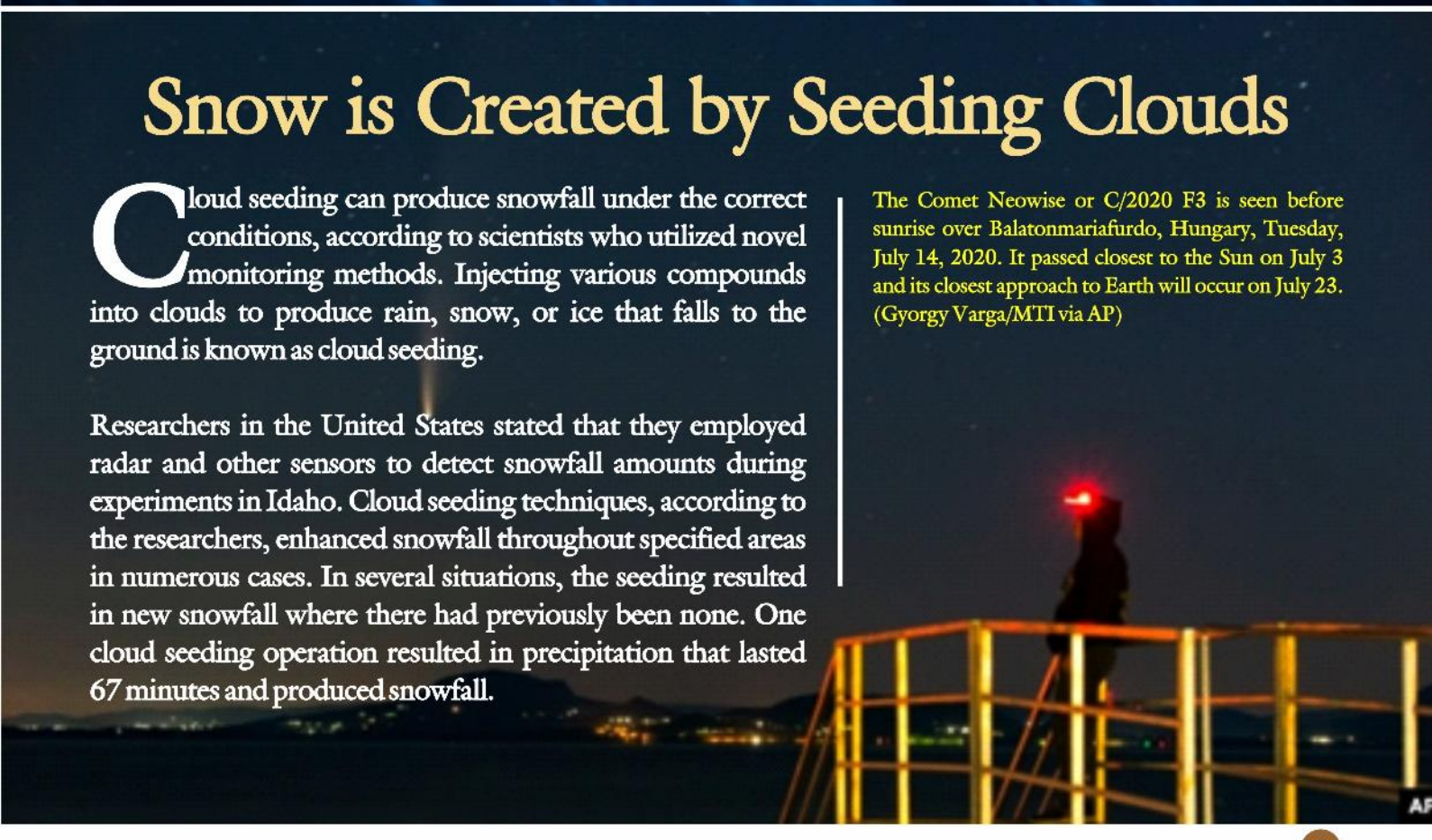
A special mountaintop radar called Doppler on Wheels measures precipitation in the new multi-institution cloud seeding study. (Photo Credit: Joshua Aikins)

Snow is Created by Seeding Clouds

Cloud seeding can produce snowfall under the correct conditions, according to scientists who utilized novel monitoring methods. Injecting various compounds into clouds to produce rain, snow, or ice that falls to the ground is known as cloud seeding.

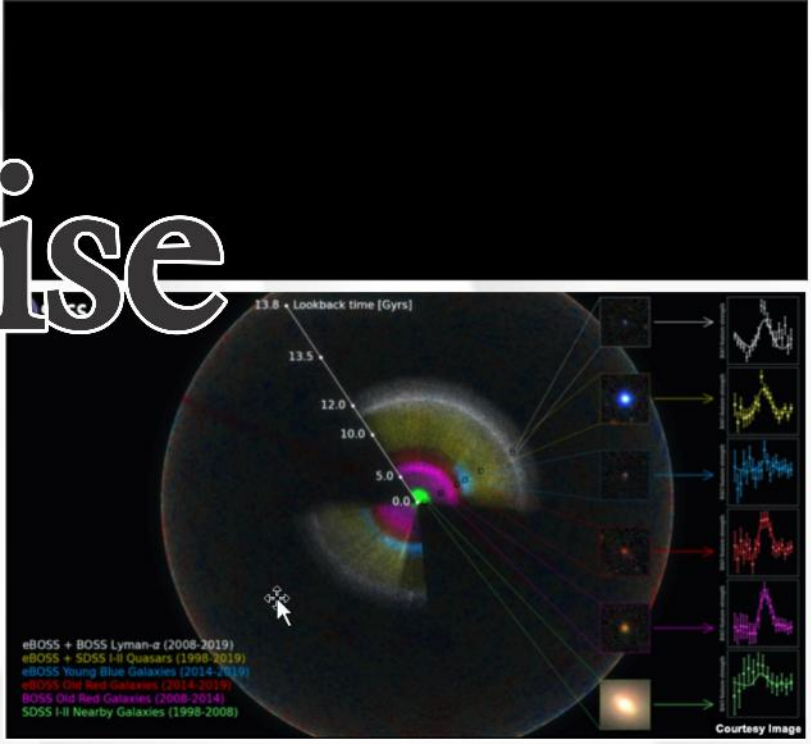
Researchers in the United States stated that they employed radar and other sensors to detect snowfall amounts during experiments in Idaho. Cloud seeding techniques, according to the researchers, enhanced snowfall throughout specified areas in numerous cases. In several situations, the seeding resulted in new snowfall where there had previously been none. One cloud seeding operation resulted in precipitation that lasted 67 minutes and produced snowfall.

The Comet Neowise or C/2020 F3 is seen before sunrise over Balatonmariafurdo, Hungary, Tuesday, July 14, 2020. It passed closest to the Sun on July 3 and its closest approach to Earth will occur on July 23. (Gyorgy Varga/MTI via AP)



Comet Neowise

Neowise, a comet, offered spectacular light shows for people all over the world. Comets are ice, rock, and dust-covered solar system objects. Neowise was believed to be around 5 kilometers across by scientists. It was the brightest comet in 25 years to appear above the Northern Hemisphere. Many people around the world shared photos of the comet as it lighted up the sky above them on social media.



The SDSS map is shown as a rainbow of colors, located within the observable Universe (the outer sphere, showing fluctuations in the Cosmic Microwave Background). (Anand Raichoor (EPFL), Ashley Ross (Ohio State University) and the SDSS Collaboration)

Universe Map in three dimensions

Scientists have unveiled the world's largest three-dimensional (3D) map of the universe. The 20-year project will use data collected from a telescope in the American state of New Mexico to map the universe. The 3D map provided observations of almost two million galaxies and quasars, according to the researchers. Quasars are "bright galaxies lighted up by material falling onto a center supermassive black hole," according to the definition.

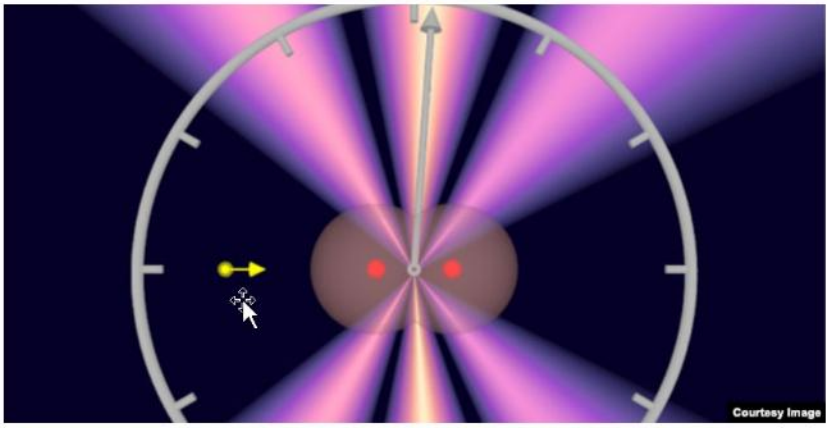
A fossil of a 425 million-year-old millipede called Kampecaris obanensis and unearthed in Scotland is shown in this undated handout photo released to Reuters on May 27, 2020. British Geological Survey/Handout via REUTERS

The Oldest Known Animal on the planet

Scientists announced in May that they had identified the oldest-known land mammal. The millipede-like creature's remains were discovered in Scotland. The little, fossilized organism is thought to be 425 million years old, according to researchers. It's possible that it paved the path for the many species who would eventually migrate to land. While the organism is the oldest known terrestrial mammal from a fossil, soil worms are thought to have existed before them, possibly 450 million years ago.

For the first time, a 'zeptosecond' WAS MEASURED

A zeptosecond is the shortest unit of time ever recorded, according to German scientists. One trillionth of a billionth of a second is a zeptosecond. Researchers discovered the time it took a photon – a particle of light – to cross a hydrogen molecule while investigating how long it took a photon – a particle of light – to traverse a hydrogen molecule. The photon crossed the molecule in 247 zeptoseconds, according to the researchers. In a statement, the researchers noted, "This is the lowest time period that has been successfully measured to date."



This image represents the scientific experiment carried out by German researchers who say they successfully measured the smallest unit of time ever recorded. (Photo: Sven Grundmann, Goethe University Frankfurt)

Prof YAKUBU becomes Dean of Student Affairs

NISEB congratulations Prof Musa Toyin YAKUBU on his recent appointment as the Dean of Student Affairs, University of Ilorin. Prof Yakubu is the Secretary of NISEB BOT and also the Chairman of NISEB at Unilorin. NISEB trust and believe he will take the student affairs unit to the next better level based on his past records of brilliant performances.

MOUNTAIN TOP UNIVERSITY

Km 12, Lagos / Ibadan expressway, MFM Prayer City, Ogun State

Announces The

21st NISEB ANNUAL SCIENTIFIC CONFERENCE AND GENERAL MEETING

MTU 2022 CONFERENCE

THEME

Experimental Biology: A panacea to achieving Sustainable Development Goals in the post- pandemic era

SUB-THEMES:

- Nutrition, Food Safety and Technology
- Phytomedicine and Drug Discovery
- Pharmacology and Toxicology
- Waste Management and Bioremediation
- Microbiology and Biotechnology
- Deep Learning and Artificial Intelligence
- Bioinformatics and Genomics
- Clean Energy and Nanotechnology
- Human Health and Molecular Medicine
- Human Anatomy and Physiology

DATE: TUESDAY, 30TH AUGUST - 2ND SEPTEMBER 2022.

VENUE: MOUNTAIN TOP UNIVERSITY KM 12, LAGOS/IBADAN EXPRESSWAY, MFM PRAYER CITY, OGUN STATE.

Host
Prof. Elijah Adebowale Ayolabi
Vice Chancellor, MTU

Chief Host
Dr. Daniel Kolawole Olukoya
Chancellor, MTU

Memorial Lectures:

Prof. A.U. Osagie Lecture:
Prof. Josiah Sunday
Dean, Faculty of Basic Medical Sciences
Igbinedion University, Okada

Prof. Justine Timothy E. Lecture:
Prof. O. Stephen Adeyemi
Director, Academic Planning,
Landmark University, Omu Aran

Pre Conference Workshop
- Molecular Biology Techniques
- Use of Drosophila In Biomedical Research

(28th & 30th August, 2022)
Registration Fee ₦25,000.00

Participants: All area of Science [Life Sciences, Medical Sciences, Agricultural Sciences, Food Science & Technology , Chemical Science & Engineering , Physical Sciences etc]

CONFERENCE FORMAT
HYBRID: [VIRTUAL & PHYSICAL]

Conference Registration

	Registration Fee	Arrival Day
NON MEMBER	₦ 30,000.00	—
MEMBER	₦ 25,000.00	₦ 5,000.00
STUDENTS	₦ 10,000.00	—
FOREIGN	$ 150.00	$ 10.00
CORPORATE	NEGOTIABLE	—
EARLY BIRD (On or before July 8, 2022)	₦ 20,000.00	₦ 5,000.00
FOREIGN (On or before July 8, 2022)	$ 100.00	$ 10.00

Membership Registeration fee 5000.00

ABSTRACTS SUBMISSION

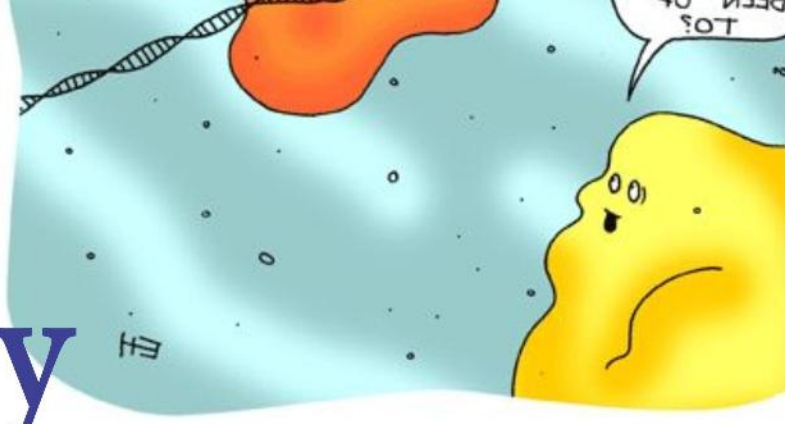
Abstract of not more than 250 words should be submitted under any of the sub themes to nisebconference2022@mtu.edu.ng on or before 8th July, 2022. Other information about the abstract should includes title, author's name and institutional affiliation,email address, phone number and keywords. All full papers to be published in a NISEB Journal must be submitted on or before 29th July 2022.

For more details on the conference, participants should visit www.mtu.edu.ng/nisebconference2022 or Contact

LOC Chairman: Prof. G. O. Ajayi 08025088292

LOC Secretary: Dr. O. I. Ogunsuyi 07038973200

Payments should be made to NISEB 2022 CONFERENCE ACCOUNT



Funny Experimental Biology Memes

1. The optimist sees the glass half full. The pessimist sees the glass half empty. The chemist sees the glass completely full, half with liquid and half with air.

Explanation: The glass is always completely full of something, be it a solid, liquid, or gas — unless the entire thing is in a vacuum and all the atoms are removed.

2. Organic chemistry is difficult. Those who study it have alkynes of trouble.

Explanation: An alkyne is a common type of carbon compound with one carbon-to-carbon triple bond. They are frequently used and studied in organic chemistry. It's pronounced like "al kine." So, alkynes of trouble sounds like all kinds of trouble.

3. Did you just mutate for a stop codon? Because you're talking nonsense!

Explanation: A stop codon is a nucleotide in messenger RNA that signals the stop of a translation — the process that cells use to make proteins.

4. How did the English major define microtome on his biology exam? A: An itsy bitsy book.

Explanation: Tome means book, so a micro-tome would be a small book, but to a biologist, a microtome is an instrument used to cut tissue into thin slices.

5. What did Gregor Mendel say when he founded genetics? A: Woopea!

Explanation: Gregor Mendel's genetics experiments were done with pea plants.

6. Q: Did you hear about the man who got cooled to absolute zero?
   A: He's 0K now.

Explanation: "0K" here actually stands for zero Kelvin. Kelvin is a temperature scale in which zero is the coldest possible temperature, referred to as absolute zero, where molecules cease to move. A person wouldn't actually be OK if cooled to absolute zero.

7. I wish I was adenine, then I could get paired with U.

Explanation: In RNA, adenine (A) forms a "base pair" with uracil (U).

8. Q: Anyone know any jokes about sodium?
   A: Na

Explanation: The symbol for sodium on the periodic table is "Na," which when said as a word is pronounced like nah, another way to say no.

9. A couple of biologists had twins. They named one Jessica and the other Control.

Explanation: Scientists must always use a control group or condition — which they don't experiment on and just leave "as-is" — when conducting an experiment.

10. Q: What element is a girl's future best friend? A: Carbon.

Explanation: "Diamonds are a girl's best friend" is a well-known saying. Diamonds are created from carbon under extreme pressurize and over time, so carbon will eventually become "a girl's best friend" — hence her "future best friend."

11. Biology is the only science in which multiplication is the same thing as division.

Explanation: In biology, cells *multiply* in number when one cell *divides* into two.