Conserve™ The Energy

It's Tomorrow™

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Nanotechnology

Why ???

We the people on the earth are gifted with wonderful energy sources by the nature, which has made our routine much more smother & easier... However, this gift of the nature is ' limited '. What we have done is, with the growth of science & technology, we have started using it extremely, because of which the energy resources are going to finish in near future. Hence, let us take the pledge to conserve the energy - save the energy!!!

Tip of the Month

Article - 1 : Scientists study organization of life on a planetary scale

When we think of life on Earth, we might think of individual examples ranging from animals to bacteria. When astrobiologists study life, however, they have to consider not only individual organisms, but also ecosystems, and the biosphere as a whole. In astrobiology, there is an increasing interest in whether life as we know it is a quirk of the particular evolutionary history of the Earth or, instead, if life might be governed by more general organizing principles. If general principles exist that can explain properties common to all life on Earth, scientists hypothesize, and then they may be universal to all life, even life on other planets. If a "universal biology" exists, it would have important implications for the search for life beyond Earth, for engineering synthetic life in the lab, and for solving the origin of life, enabling scientists to predict at least some properties of alien life. Previous research in this area has primarily focused on specific levels of organization within biology such as individual organisms or ecological communities. These levels form a hierarchy where individuals are composed of interacting molecules and ecosystems are composed of interacting individuals.

To understand the general principles governing biology, we must understand how living systems organize across levels, not just within a given level," says lead author Hyunju Kim of ASU's Beyond Center and the School of Earth and Space Exploration. Through this study, the team found that biochemistry, both at the level of organisms and ecosystems, is governed by general organizing principles. "This means there is logic to the planetary-scale organization of biochemistry," says co-lead author Harrison Smith of ASU's School of Earth and Space Exploration. "Scientists have talked about this type of logic for a long time, but until now they have struggled to quantify it. Quantifying it can help us constrain the way that life arises on a planet." For this research, the team constructed biochemical networks using a global database of 28,146 annotated genomes and metagenomes and 8,658 catalogued biochemical reactions. In so doing, they uncovered scaling laws governing biochemical diversity and network structure that are shared across levels of organization from individuals to ecosystems, to the biosphere as a whole.

*Source: https://www.sciencedaily.com/releases/2019/02/190205204102.htm

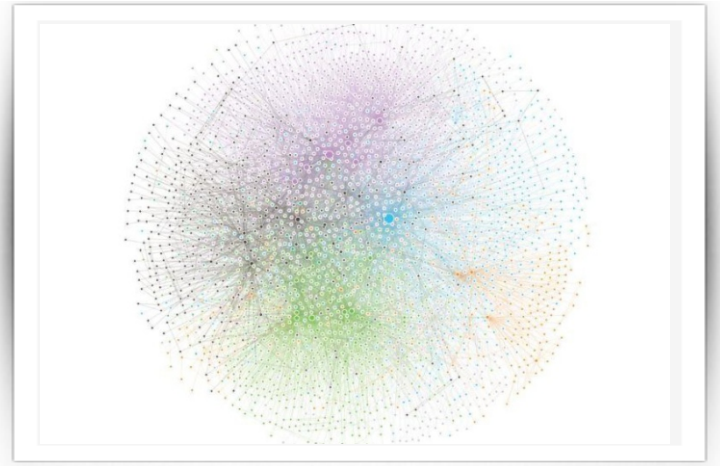


*Image Source: https://www.sciencedaily.com/releases/2019/02/190205204102.htm

Article - 2 : Volcanic growth 'critical' to the formation of Panama

It is a thin strip of land whose creation kick-started one of the most significant geological events in the past 60 million years. Yet for scientists the exact process by which the Isthmus of Panama came into being still remains largely contentious. In a new study published today in the journal Scientific Reports, scientists from Cardiff University have proposed that the Isthmus was born not solely from tectonic process, but could have also largely benefited from the growth of volcanoes. The Isthmus of Panama is a narrow piece of land that lies between the Caribbean Sea and the Pacific Ocean and links North and South America. It is believed to have fully formed around 2.8m years ago, yet scientists are still unsure about the processes and timescales that led up to this. Up until now researchers have favored a model in that the Isthmus of Panama was created through the collision of two of Earth's tectonic plates -- the South American Plate and the Caribbean Plate -- which pushed underwater volcanoes up from the sea floor and eventually forced some areas above sea level. However, new geochemical and geochronological data taken from the Panama Canal and field investigation of old volcanoes in this area have provided evidence that there was significant volcanic activity taking place during a critical phase of the emergence of the Isthmus of Panama around 25 million years ago.

The growth of volcanoes in the Panama Canal area is thought to have been particularly significant for the formation of the Isthmus because the Canal was constructed in a shallow area of Panama, which is believed to have remained underwater for the major part of the geological history of the region. This suggests that the formation of the volcanoes along the Canal could have played an important role in the rise of the Isthmus above sea level. Before a landmass existed between North and South America, water had moved freely between the Atlantic and Pacific oceans, but this changed when Panama formed, forcing warm Caribbean waters northwards to form what we now know as the Gulf Stream, thus creating much warmer climates in north-western Europe.

The formation of the Isthmus of Panama also played a major role in Earth's biodiversity, making it easier for animals and plants to migrate between the continents. In North America, the opossum, armadillo and porcupine all trace back to ancestors that came across the land bridge from South America. Likewise, the ancestors of bears, cats, dogs, horses, llamas, and raccoons all made the trek south across the Isthmus of Panama.

*Source: https://www.sciencedaily.com/releases/2019/02/190205102540.htm

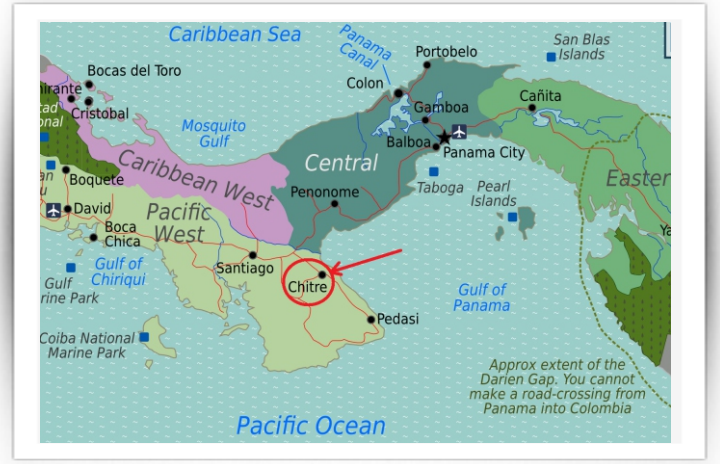


*Image Source: http://panamaadvisoryinternationalgroup.com/blog/news-from-panama/the-urban-commercial-and-business-boom-in-chitre/

Article - 3 : Novel hypothesis goes underground to predict future of Greenland ice sheet

The Greenland ice sheet melted a little more easily in the past than it does today because of geological changes, and most of Greenland's ice can be saved from melting if warming is controlled, says a team of Penn State researchers. There is geologic data that suggests the ice sheet was more sensitive to warming and temperature variations in the past million years, and not so much in the more recent past. Too much warming will cause Greenland to lose most or all of its ice over the coming centuries, but most research indicates that the threshold warmth for complete ice loss has not been reached yet. Paleoclimatic records indicate that most of Greenland was ice-free within the last 1.1 million years even though temperatures then were not much warmer than conditions today. To explain this, the researchers point to there being more heat beneath the ice sheet in the past than today.

Data show that when the Iceland hot spot -- the heat source that feeds volcanoes on Iceland -- passed under north-central Greenland 80 to 35 million years ago, it left molten rock deep underground but did not break through the upper mantle and crust to form volcanoes as it had in the west and east. The Earth's climate then was too warm for Greenland to have an ice sheet, but once it cooled the ice sheet formed, growing and shrinking successive with ice ages. The idea is that the loading and unloading, flexing and unflexing from ice ages tapped into slightly melted rock that was left deep under Greenland by the Iceland hot spot and brought that melt up. Changes to the ice sheet allowed the molten rock to move closer to the Earth's surface, even to the base of the ice. The hotter bed melted more ice from below, lubricating the ice sheet so it was thinner and easier to melt from above. "The Greenland ice sheet is very likely to melt a lot and retreat, and contribute to sea level in the next few centuries," Pollard said. "This study is part of the puzzle of figuring out how much it will melt and retreat. We are using past geologic data to validate the models that are being used for the future." If Greenland's ice sheet were to completely melt today, global sea levels would rise nearly 23 feet and flood coastal areas. Parts of cities like New York would be underwater. The team says future studies should integrate geologic and geophysical data as well as glaciological, atmospheric, oceanic and Paleoclimatic information to better project how much and how fast the ice sheet will melt and its effect on sea-level rise.

** Source: https://www.sciencedaily.com/releases/2019/02/190202171847.htm*

**Image Source: https://phys.org/news/2019-02-hypothesis-underground-future-greenland-ice.html*

Article - 4 : How predatory plankton created modern ecosystems after 'Snowball Earth'

Around 635 to 720 million years ago, during Earth's most severe glacial period, Earth was twice almost completely covered by ice, according to current hypotheses. The question of how life survived these 'Snowball Earth' glaciations, lasting up to about 50 million years, has puzzled scientists for many decades. An international team, led by Dutch and German researchers of the Max Planck Society, now found the first detailed glimpse of life after the 'Snowball' in the form of newly discovered ancient molecules, buried in old rocks. All higher animal life forms, including us humans, produce cholesterol. Algae and bacteria produce their own characteristic fat molecules," says first author Lennart van Maldegem from Max Planck Institute (MPI) for Biogeochemistry, who recently moved to the Australian National University in Canberra, Australia. "Such fat molecules can survive in rocks for millions of years, as the oldest (chemical) remnants of organisms, and tell us now what type of life thrived in the former oceans long ago." But the fossil fats the researchers recently discovered in Brazilian rocks, deposited just after the last Snowball glaciation, were not what they suspected. Yet the origin of the compound remained enigmatic.

"We of course looked if we could find it elsewhere," says van Maldegem, who then studied hundreds of ancient rock samples, with rather surprising success. "In particular the Grand Canyon rocks really were an eye-opener," says Hallmann. Although nowadays mostly sweltering hot, these rocks had also been buried under kilometers of glacial ice around 700 million years ago. Detailed additional analyses of molecules in Grand Canyon rocks -- including presumed BNG-precursors, the distribution of steroids and stable carbon isotopic patterns -- led the authors to conclude that the new BNG molecule most likely derives from heterotrophic plankton, marine microbes that rely on consuming other organisms for gaining energy. "Unlike for example green algae that engage in photosynthesis and thus belong to autotrophic organisms, these heterotrophic microorganisms were true predators that gained energy by hunting and devouring other algae and bacteria," according to van Maldegem. While predation is common amongst plankton in modern oceans, the discovery that it was so prominent 635 million years ago, exactly after the Snowball Earth glaciation, is a big deal for the science community.

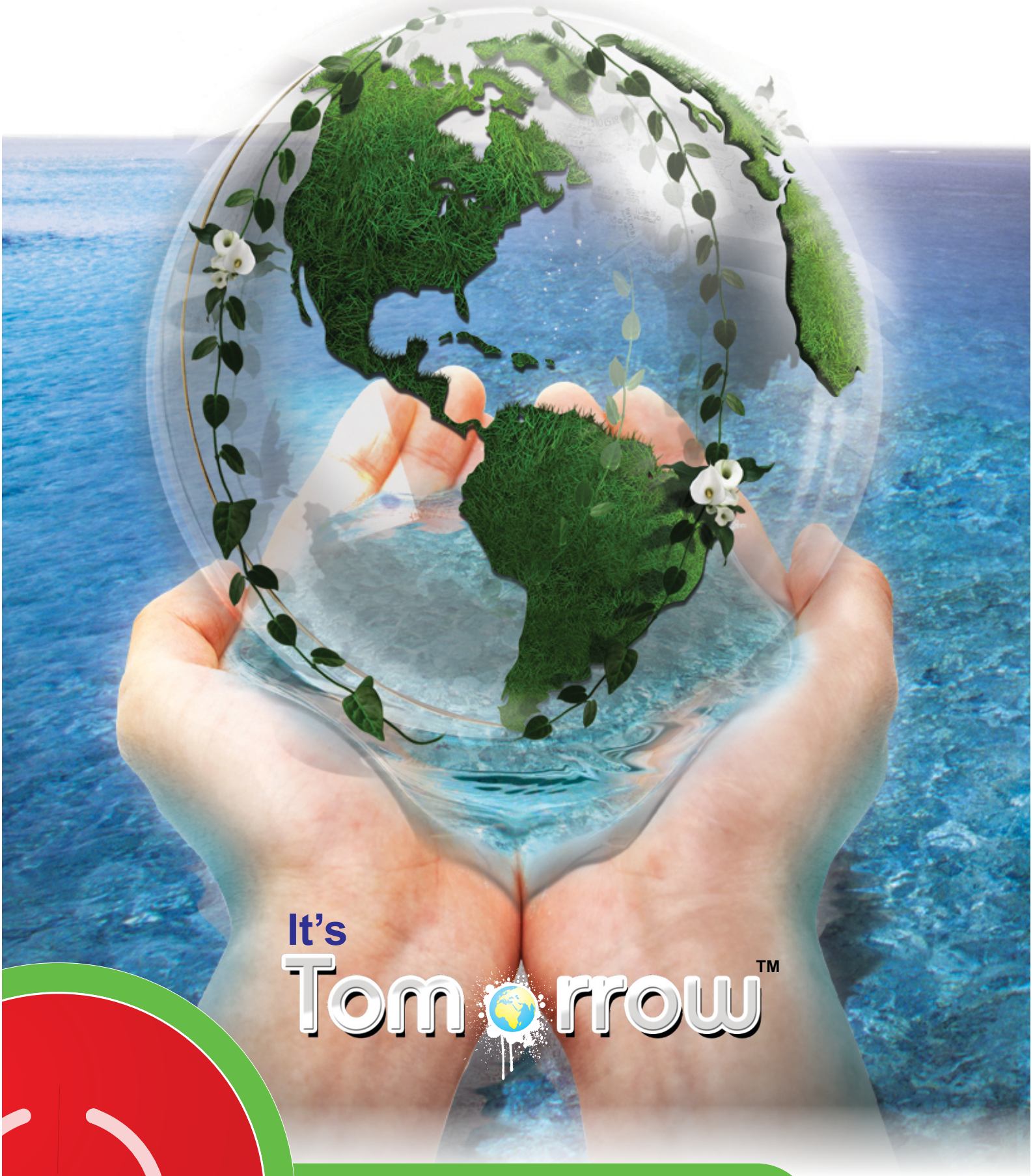
"Parallel to the occurrence of the enigmatic BNG molecule we observe the transition from a world whose oceans contained virtually only bacteria, to a more modern Earth system containing many more algae. We think that massive predation helped to 'clear' out the bacteria-dominated oceans and make space for algae," says van Maldegem. The resulting more complex feeding networks provided the dietary requirements for larger, more intricate life forms to evolve -- including the lineages that all animals, and eventually we humans, derive from. The massive onset of predation probably played a crucial role in the transformation of our planet and its ecosystems to its present state.

**Source: https://www.sciencedaily.com/releases/2019/02/190201114135.htm*

**Image Source: https://www.innovations-report.com/html/reports/earth-sciences/how-predatory-plankton-created-modern-ecosystems-after-snowball-earth.html*

Conserve the Energy,
Save our Climate!

Conserve™
The Energy



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Nanoland Ltd.
Mezzanine Floor, N. R. House, Nr. Popular House, Ashram Road, Ahmedabad - 380 009. INDIA
Tel : +91 79 27545254/5255/5256 Fax : +91 79 27545257/4167
Email : info@conservetheenergy.com
Web : www.conservetheenergy.com

/cnsrv_enrgy
/energyconserve