



ABOUT US

The Synapse Club was created with an aim to allow students to develop and exhibit their technical, outreach, arts and other skills. And the newsletter is a tiny idea of the members of Synapse Club.

Atavism is a phenotypic trait that appears suddenly in an organism. Yes, it is that feature we have always had the genes for, but have never expressed. Have you heard of the dolphin with legs or the baby born with a tail? Because if you have, you know what we're talking about!

Just like its name, this newsletter is a little something that we always had the genes for, but we never expressed. We agree that the newsletter isn't as weird as the chicken with teeth but it sure is something out of the blue to bring all of us together. We aim to make this newsletter the place you can go for the latest news in the biotechnology world, bizarre but true science headlines, and conversations that you should hear more of.



Depression & anxiety did affected students in the pandemic!

Researchers at Boston University conducted an online survey of 33,000 students in the US to assess their mental health. Alarmingly, more than 80% of the student body had mental health issues in the last month and around two-thirds admitted they struggled with isolation, feeling lonely. Although this may come as a shock to certain sections, students like me are not surprised. Trying to keep our mental health along with the oddity that are online classes has impacted us (students) in various ways. While most non-students have returned to something akin to a normal routine, students, especially in India, are struggling with continuing study from home.

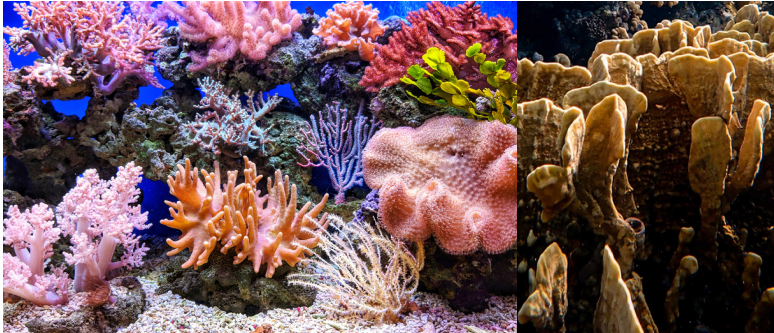
Kelsey Lipson, a co-principal investigator for the survey, acknowledges that it shows a treatment gap between the services available and the students availing these services. She says that there is a need for urgent resources since most students seek help only when they are dealing with a crisis. The survey also highlights the need for mental health education in the curriculum so that students know when and how to seek help.

ARE YOU EVEN READING?

If you are, you're sure to have feedback for the team. Send it to 181824@juitsolan.in so that we can know. We would also love to feature your opinion on biology topics or your coverage of the latest research in the next issue. Your email could make our day!



Why coral reefs need our protection?



The most beautiful gift of nature is that it gives one pleasure to look around and try to comprehend what we see, but rather than enjoying what Nature has to offer, we have started to demolish it.

An example of this is the underwater ecosystem supported by reef-building corals. Coral reefs are very useful in the protection of coastlines from storms and abrasion. Over half of billion people depend on coral reefs for food (nutraceuticals and fish that grow on reefs) and medicines (cytarabine, trabectedin, ziconotide, vidarabine and azidothymidine). But due to rigorous climatic changes and an increase in water temperature, Coral reefs have started to bleach and lose their vibrant and beautiful colors. With rising temperatures, Coral stresses out and expels the algae zooxanthellae (gives colors to corals) which makes them look bleached out. And if this regression continues, the corals eventually die, affecting the lives of humans and animals.

Unfortunately, for us, the National Oceanic And Atmospheric Association says that between 2014-2015 around 75% of corals experienced this climatic torment. There is a possibility that future generations would be deprived of these nature's wonders. But all is not lost. Scientists at Michigan State University have found out biomarkers that make corals resistant to bleaching. More investigation into these biomarkers could help us find a way to preserve these majestic beauties.

Although the discovery of such biomarkers could be a step in the right direction, ever-continuing coral bleaching is exactly why climatic problems need to be prioritized. Deforestation, non-renewable energy resources, and the use of chemical fertilizer should be banned and manures should be promoted and new climatic laws should be implemented. We are strong when united and weak when divided, we need to work together for our mother nature.

Black Carbon Aerosols from South Asia could affect the Arctic!

Black Carbon Aerosols are air pollutants released from the burning of wood and other incomplete combustion reactions. The amount of black carbon particulate matter released by South Asian countries, including India, is very high.

Research has shown that these black carbon particles/aerosols can travel from near-the-equator regions to the northern Arctic where it makes ice and snow, less reflective of light. This, in turn, leads to higher absorption of sunlight by ice/snow and subsequent melting of ice bodies.

The scientists came to this conclusion after they found black soot (carbon) from Asian sources in Arctic regions. Although there are questions yet unanswered, one thing is certain, we need to do something about our emissions. NOW!



References:

1. Michigan State University. "Uncovering how some corals resist bleaching." ScienceDaily. ScienceDaily, 8 February 2021. <www.sciencedaily.com/releases/2021/02/210208114257.htm>
2. <https://www.nature.com/articles/d41586-021-00476-3>
3. Backman, J., Schmeisser, L., & Asmi, E. (2021). Asian emissions explain much of the Arctic Black Carbon events. Geophysical Research Letters, 48, e2020GL091913. <https://doi.org/10.1029/2020GL091913>

IG NOBEL PRIZE: RESEARCH THAT MAKES YOU LAUGH, THEN THINK!

In 1991, Marc Abrahams, the editor of the magazine *Annals of Improbable Research* decided to set up the Ig Nobel Prize. A play on the word, “ignoble”, the coveted prize awards researchers that work on truly extraordinary projects and are sure to make you laugh. Whether it is finding if alligators make weird sounds after inhaling helium air or developing bras that can act as face masks, the Ig Nobel Prize has awarded hilarious innovations each year. Below are two researches that bagged the award this year.

ARE YOU NARCISSISTIC? COZ' YOUR BROWS WON'T LIE!

Yes, that's what psychologists Miranda Giacomini and Nicholas Rule set about investigating. They went above and beyond to devise a method that would help anyone to find a potential narcissist by the shape of the eye-brows. Needless to say, they covered their eyebrows during the prize award ceremony.



Ig Nobel

DID YOU KNOW ABOUT KNIVES MADE FROM HUMAN POOP?

Because if you didn't, you are sure going to enjoy reading the research of material scientists from the US and UK who set about to experiment if knives made from frozen human feces could work. Unfortunately, they were disappointed with how their knives melted when they tried to cut using them.

A GRAND CEREMONY TO TOP IT OFF!

As if the hilarity of the innovations wasn't enough, the Ig Nobel Prize Ceremony is a must-watch (on YouTube, in your free time that is). The ingeniously designed trophies, the 24/7 lectures, the Zimbabwean ten trillion dollar note, all add to this grand celebration. Here are the links to the [2020 Ceremony](#) and [2019 Ceremony](#) if you fancy a watch!

THE IMMUNE WARRIORS

We are the granulocytes. We patrol the bloodstream and eat all bacteria.

We are mast cells, we defend against parasites and cause allergies.

We are macrophages, the big eaters. We coordinate with others during immune response. Otherwise, we clear debris and recycle dead cells.

We are neutrophils, we rush to injury site in "swarms" and instruct other cells to seal wounds.

We are dendritic cells, we process antigens and present them to B-cells and T-cells.

We are the natural killer cells, we slay virus-infected cells and tumor cells

References & Photo credits:

1. Cartoon made from elements and templates available from canva.com, Photo is a copyright of Improbable Research.
2. <https://www.improbable.com/ig-about/winners/#ig2020> , <https://www.improbable.com/ig-about/winners/>

MEAT CULTURED IN FERMENTERS & LABS: WOULD ANYONE WANT A SLICE?



Recently, Singapore became the first country to approve the sale of artificial/cultured meat. This move is being hailed as a transformative moment for the meat industry. Scientists around the globe are making efforts to make meat production both more humane and environmentally sustainable and this is where cultured meat comes into the picture. The cultured meat refers to the meat grown in-vitro by culturing the stem cells derived from farm animals by using advanced tissue-engineering techniques inside a bioreactor. The cultured meat is shown to use 45% less energy and 99% fewer land resources for its cultivation when compared to regular meat. It also is an eco-friendlier option as it is known to produce 96% lesser greenhouse gases. Furthermore, it can put an end to animal slaughter and considering the rapid rise in population the world is facing, the cultured meat also can guarantee food security for the future generations. This becomes all the more important when we consider the fact that meat consumption is expected to get doubled by the year 2050. All in all, the cultured seems to be an ideal alternative to regular meat, but is it? Let's find out.

Cultured meat is far from being perfect and has a host of shortcomings. Cultured meat production at present is a fairly new process and is very expensive. So, its production on an industrial scale will only be feasible when alternative and cost-effective methods for the same have been developed. Though cultured meat endorses itself has a more ethical source of protein as compared to regular meat, the culture medium used to grow it consists of animal-derived serum-like FBS, FCS etc. Besides these, another challenge for cultured meat to become a widely consumed food item is to gain social acceptance. Many religious groups are against the “unnaturalness” or “artificialness” of the cultured meat. The cultured meat's commercial viability is further limited by its different color, shape and texture. The researchers have also raised their concerns regarding the unemployment that would result due to the shutting of livestock farms/ slaughterhouses in a world which already faces the severe issue of unemployment. Another issue concerning cultured meat that remains yet to be addressed is the lack of regulatory frameworks for its production and distribution.

Thus, cultured meat holds a lot of potential as an alternative to conventional meat. However, a great body of research needs to be performed to make it cost-effective and tackle ethical and societal issues surrounding it, before its large- scale production is achievable.

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References & Photo credits:

1. Photos credits: Pexels, Pixabay
2. <https://www.researchgate.net/publication/272424526> In vitro meat production Challenges and benefits over conventional meat production
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4. https://www.youtube.com/watch?v=z1m_pPnOx8Q