



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.



From the Head of Department's Desk

Synapse is having a bright and lively culture with a dynamic team. It imbibes thoughts, hard work, and efforts of numerous students, alumni, faculty and staff members of the department. In this era of COVID-19 Pandemic, Synapse regularly conducted online events that spread positivity, enthusiasm and happiness among participants. The spirit of Synapse lies in scientific writing especially in the domains of Biotechnology and Bioinformatics; though not limited to and it includes diversity of talents. My best wishes to Team-Synapse. Good luck.

- Prof. (Dr.) Sudhir Kumar

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!



Blood clots and the Johnson & Johnson COVID-19 vaccine!

The United States F.D.A. has finally given an Emergency Use Authorization (EUA) to the single-dose Johnson & Johnson vaccine after temporarily pausing its use due to report of blood clots forming after vaccination. The authorization allows the ten million doses that imported from J&J's Netherlands facility to now be administered to people. Concerns for the J&J vaccine were also raised following the reports of unhygienic conditions in a vaccine manufacture facility in Baltimore.

This move comes after European regulators had paused the administration of the Astra-Zeneca vaccine in response to the formation of unusual blood clots in a few people after vaccination. The halt was removed after it was found that the benefits outweighed the risks.

The Indian government has also allowed all citizens above the age of 18 to get the vaccines from May 1. Until now, the vaccine was only being given to healthcare workers, elderly and citizens with co-morbidities.



Meanwhile, in India, New COVID-19 cases surpass all previous daily records

In 24 hours on April 22, 2021, India recorded more than 3,12,000 new coronavirus cases, significantly higher than the previous one-day high of almost 300,669 cases recorded in the United States. The numbers highlight the dire situation in the country as a second-wave has led to a collapse in the healthcare systems. Some projections expect this number to touch the 5-6 lakh mark in the coming days [1].



24 die in Nashik due to oxygen leak, hospitals running out of oxygen!

A leak in an oxygen tank in Nashik caused the halting of oxygen supply for 30 minutes. The leak led to the death of almost 24 patients on oxygen in the hospital. More and more hospitals across the country are running short of oxygen as the state and national governments are in a frenzy to provide adequate oxygen to whoever needs it[2].

Kumbh Mela and political rallies: super-spreader events that did more harm than good!

Although this newsletter aims to disseminate the latest news & research and discuss the COVID-19 pandemic without any opinions, the after-effects of the political rallies and the state-sponsored Kumbh Mela have the country reeling. Unfortunately, for us, the Prime Minister's address failed to bring any relief to the currently collapsing and overburdened healthcare system of the nation and to those whose loved ones have been affected. We urge all of you to stay safe and inside your homes. Please keep that Mask Up whenever you venture outside!

References & Photo Credits:

1. NY Times Report: <https://www.nytimes.com/2021/04/22/world/india-coronavirus-record.html>
2. NY Times Nashik Report: <https://www.nytimes.com/2021/04/21/world/asia/india-coronavirus-oxygen.html>
3. Pictures from Pixabay, Pexels
4. US lifts pause on Johnson & Johnson vaccine: <https://www.bbc.com/news/world-us-canada-56865562>
5. <https://www.financialexpress.com/industry/technology/covid-19-vaccination-india-phase-3-for-everyone-above-18-years-from-may-1-where-when-and-how-to-register/2238975/>

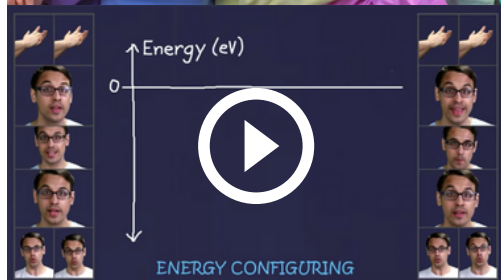
INGENIOUS SCIENCE PARODIES YOU NEED TO LISTEN TO!



With lockdowns, night curfews coming back and changing pandemic control regulations across the country, we're back to where we started an year ago. Although it's totally fine to be anxious, we have an idea that may help!

LAB RULES

This intelligent spin-off on Dua Lipa's New Rules is sure going to brighten your day wherever you're. It is a must-watch if you're a stickler for lab rules (everybody reading this should be) and I am sure you are going to find some rules that couldn't make it to this song!



THE MOLECULAR SHAPE OF YOU

This song takes Ed Sheeran's Shape of You and turns it into a beautiful acapella talking about molecular orbitals, talking about everything from the electrons in pi-bonds to the bonds keeping large biomolecules intact. Listen to it, will you?



CRISPR-CAS9 A CAPELLA

If you're reading this, you know CRISPR-Cas9 and how revolutionary of a discovery it is. This genome-editing technique was also awarded the 2020 Nobel Prize in Chemistry. The lyrics of this song has all you need to know about the genome editing technique. You're not going to regret listening to this one!

THE IMMUNE WARRIORS (PART-2)

We are T-helper cells. We coordinate the immune response, alerting and signaling cells when they are required.

We are killer T-lymphocytes, we release toxins so that the body can kiss all virus-infected cells and cancer cells goodbye!

We are the regulatory T-cells, we monitor the helper and killer T-cells. We ensure that they don't damage the body itself in the process of fighting invaders.

We are the B-cells and we tirelessly produce antibodies. We stick around after the infection, ready to fight if the same infection strikes again!

References & Photo credits:

1. Cartoon made from elements and templates available from canva.com,
2. <https://www.niaid.nih.gov/research/immune-cells>
3. All YouTube videos (songs) linked above are the works of respective creators; we are merely recommending them!

TIDBITS OF LATEST DISCOVERIES



And we have it: a new cell organelle!

Researchers studying cancer metastasis at Princeton University have discovered a new cell organelle that forms as a result of liquid blobs in the cells coming together. Yet unnamed, this organelle plays a role in suppressing *Wnt signalling* and therefore, can influence bone metastasis. Mass spectrometry results have shown that this mysterious organelle, controlled by the expression of the DACT1 gene, contains more than 600 proteins. Serves as a reminder that there is much to discover yet!

Chopping off this seaslug's head won't kill it?

Imagine you're a PhD candidate peeping into a tank full of sea slugs you're working with and suddenly you notice a sea slug with only its head moving around as usual. To say you'd be surprised is an understatement! Interestingly, this is just what happened to Sayaka Mitoh. After her startling observation of the slug-heads, she found that slugs of the species *Elysia marginata* and *Elysia atrovirdis* can successfully regrow their bodies after their heads are amputated from their bodies. These extraordinary sea slugs use this self-amputation to get rid of their parasite-ridden bodies.



The springhare that glows under UV light

Researchers at Northland College have recently found a springhare, which glows pink-red under the UV light. Belonging to the family Pedetidae, these springhares are the latest addition to the ever-growing list of biofluorescent animals which already includes the duck-billed platypus and flying squirrels. Analysis of hair samples from these rabbits showed that the glow is due to certain fluorescent porphyrins that are usually an indicator of diseases. At present, scientists have no idea if this reddish-pink glow is a result of an accidental evolution or serves a purpose if at all.

Photos from Mitoh et al (2021) and Olson et al (2021)

Articles on COVID-19 you shouldn't miss!

1) Pregnancy and COVID: what the data say

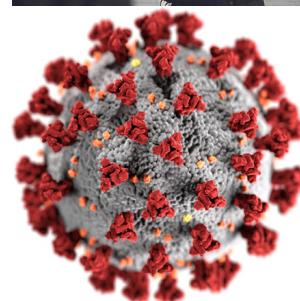
This article, published in March, just goes out to show how COVID-19 severely affects and why no data of vaccine trials in pregnant women is a problem! A must-read for you if you want to understand how expectant mothers are being affected by the pandemic.

2) Where did COVID come from?

True to its title, this piece by Smriti Mallapaty, answers the questions all of us have about where the virus came from. Was the virus circulating in Wuhan before the first cases? Was the Huanan Seafood market the place the virus was transferred to humans from zoonotic hosts? All of these questions are answered. Click [here](#) to read.

3) Vaccine Breakthrough Infections with SARS-CoV-2 Variants

This is an original report describing two cases where patients caught a coronavirus variant even after showing an immune response on receiving vaccination (both the doses). It goes to show how a lot of work remains to be done with newer variants coming up! Read [here](#).



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References & Photo credits:

1. Photos credits: Pexels, Pixabay
2. <http://www.sciencedaily.com/releases/2021/03/210309153843.htm>
3. https://www.nytimes.com/2021/03/08/science/decapitated-sea-slugs.html?utm_campaign=3d9abe9084-briefing-dy-20210309&utm_medium=email&utm_source=Nature%20Briefing&utm_term=0_c9dfd39373-3d9abe9084-45839226
4. Olson, E.R., Carlson, M.R., Ramanujam, V.M.S. et al. Vivid biofluorescence discovered in the nocturnal Springhare (Pedetidae). *Sci Rep* 11, 4125 (2021). <https://doi.org/10.1038/s41598-021-83588-0>