



ABOUT US

With an aim to nurture skills of all students, the Department of Biotechnology and Bioinformatics, JUIT, has created a platform called Synapse, for students to develop and exhibit their technical, outreach, arts and other skills.

About the name: 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 at Department of BT & BI 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.

LOCUST SWARMS: WHAT CAUSES THEM AND CAN WE PREDICT THEM?

Locust swarms, called the *Tiddi Dal* in Hindi have recently caused a lot of trouble in India and many other countries of the world. An estimate by the United Nations Organisation shows that these locusts can affect millions of lives.

In an attempt to understand why locusts congregate into swarms, the researchers at Chinese Academy of Sciences isolated a variety of compounds from locusts and studied them to see if anyone of them can act as an aggregator pheromone. They have found that a substance called 4-vinylanisole (4VA) plays a major role in attracting more locusts to the swarm. This discovery can lead to new locust traps using 4VA.

Another study, published by Kenyan researchers, describes a machine learning model that accurately predicts the breeding ground for the locusts from data reports. This model could be used well in conjunction with the pheromone to curb the damages caused by locust swarms.



References & Photo credits:

1. Fauxels by Pexels. Photo from Pixaby, Reuters.
2. Kimathi, E., Tonnang, H.E.Z., Subramanian, S. et al. Prediction of breeding regions for the desert locust *Schistocerca gregaria* in East Africa. *Sci Rep* 10, 11937 (2020). <https://doi.org/10.1038/s41598-020-68895-2>
3. Guo, X., Yu, Q., Chen, D. et al. 4-Vinylanisole is an aggregation pheromone in locusts. *Nature* 584, 584-588 (2020). <https://doi.org/10.1038/s41586-020-2610-4>

A LOOK AT HOW GENES ARE NAMED!

By Amrita Mishra (191818)

The global pandemic has made us realise how important biotechnology is in our lives. We also know that biotechnology revolves around genetics and its key unit, gene. Let me ask you, have you ever given a thought to how genes are named?

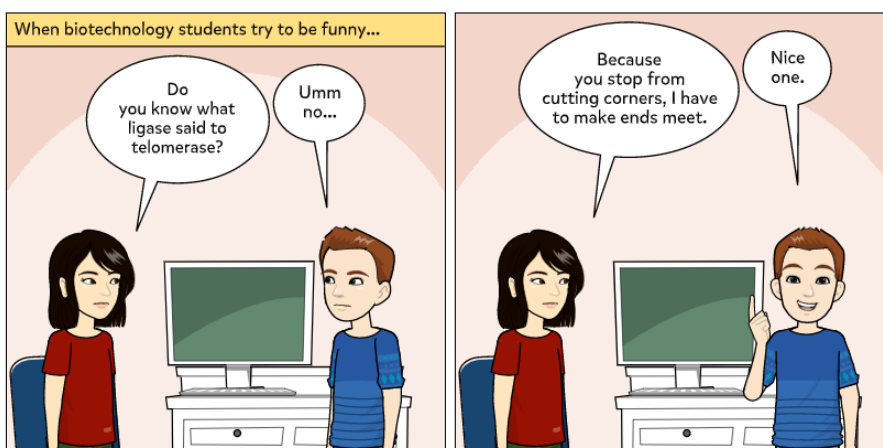


The first guidelines on naming genes came out in 1979 and gave rise to the Human Gene Nomenclature Committee. The committee was placed under the human genome organisation and thus became the HGNC in 1989. Gene symbols are decided after looking at three basic points, i.e. they should be short, pronounceable and memorable. While assigning gene symbols, one should also know that it must be unique, not be offensive and should have only uppercase Latin letters. And once a gene is assigned a symbol, it is irreversible. But with special circumstances like adoption to more appropriate alias or misleading nomenclature or it is offensive, the gene symbols can be changed. Gene names should also be written in American English, and not include the word "gene" or "human". Moreover, each gene is only assigned one symbol so that it is easy to grasp.

Different panels are made to name a gene, and naming may be based on structural domains like ABHD1 (abhydrolase domain contrary 1), or on any homologous gene within human genome like ASTOR3 (Astor family member 3). Some genes that have sequences incapable of producing a functional protein product but having high homology level (Pseudogenes) are named after their respective parent, for example, DPP3P1 (DPP3 pseudogene 1).

The HGNC also tries to reduce updates but there a few updates are made to provide people with correct information about symbols and names. Genes are a core to biotechnology and biotechnology is future aid to many obstacles and a simple mistake in gene naming can lead to a major misleading so HGNC carries loads of crucial responsibilities.

Our attempt at scientific humour...



And if this cartoon made you angry, it's time you begin sleeping properly.

Yes, new research has found out that your sleeplessness is the reason people become angrier than usual. Don't believe us? Check out the paper for yourself over [here](#).

References & Photo credits:

1. Photos taken From PublicDomainPictures, Pixabay.
2. Cartoon strip made using Pixton Comics. All characters and settings taken from their library.
3. Bruford, E.A., Braschi, B., Denny, P. et al. Guidelines for human gene nomenclature. Nat Genet 52, 754-758 (2020). <https://doi.org/10.1038/s41588-020-0669-3>
4. <https://www.genenames.org/>

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OPINION: The not-so-rosy side of scientific research!

Let's acknowledge it, we biotechnology students, won't get any flashy jobs as our computer science counterparts. And even if we manage to, the job's going may have nothing to do with science. And, this is the very the reason most of us have thought of Masters. Whether we take a PhD after that is another question, but we do know we're going to end up in something that severely impacts human lives, a major portion of which is scientific research. And, did I say publications?

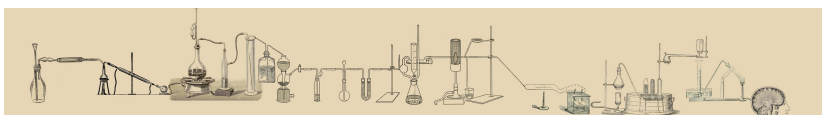
But in a world with cut-throat competition for grants, publications and funding, things aren't as rosy as we seem to think. Here a few events in 2020 have shown us the other side of research.

SCIENCE ISN'T FREE FROM RACISM.

I wish that we could say that science has no racism of any kind and that all scientists are beacons of equality. But we would be lying to ourselves if we ever said that. Because, there is a reason black women are far more likely to die during pregnancies than their white counterparts, a reason researchers from some countries can hardly make into journals of repute. And, now is the best time to address this.

The first step we should take is to recognise that the disparities exist. We should know that there is a problem when the editors of Cell Press write that they have no black colleagues. We should know that there is a problem when reviewers of highly reputed journals write to MS students saying that they work in western labs to write more competitive papers. We should know that we will have to witness a few incidents of this kind if we want to make a career in research. And most importantly, we should know not to have disparities of race and colour come in the way of revolutionising research.

Perhaps, that is all we can do (as students).



THE LANCET, NEJM RETRACT HYDROXYCHLOROQUINE STUDIES!

Perhaps the biggest research controversy in this pandemic has been the retraction of two studies on drug treatments for COVID-19, both of which were published in highly-reputed journals. The studies, one published in The Lancet and the other in the New England Journal of Medicine, were retracted after the authors claimed that they didn't have access to the raw data.

This statement from the authors did puzzle everyone, as Dr Sapan Desai, the Chief Executive of Surgisphere, the company behind the data, was one of the co-authors. Many have been asking how the chief executive cannot have access to the data of his own firm.

Coming to The Lancet study, the authors claimed that hydroxychloroquine harmed patients with coronavirus and that the conclusion had been reached after studying the effects of the drug on 96,000 patients. With that large of a number, this paper led to various governments and the World Health Organization to halting clinical trials for treating coronavirus patients with hydroxychloroquine.

But, what's shocking is that the paper revealed a lot of discrepancies on close examination.

This has raised questions over the irresponsible nature of the highly-esteemed journal. Many, including a Former French Minister, have claimed that studies like these are published only because the journal editors are pressurized to present skewed data in a great light. The whole scandal has left the scientific community shocked, but perhaps, the biggest question is how often can studies like these go unnoticed and never face retraction. Find more [here](#).

NOBEL LAUREATE FRANCES ARNOLD RETRACTS A PAPER!

If you have seen the Nobel Prize ceremony of 2018, you're sure to have not missed Frances Arnold, the chemical engineer from Caltech.

Revolutionary as her work was, even she admits to making mistakes. In her tweets at the beginning of 2020, she admitted that she didn't have enough time to look at the results before the paper was published. And when the results were found non-reproducible, she and her team retracted the paper. While all scientists admired her courage to admit her mistakes and retract the paper, the question is whether we'd be as supportive of someone who was at the beginning of their research career (just as we are). You can read more [here](#).



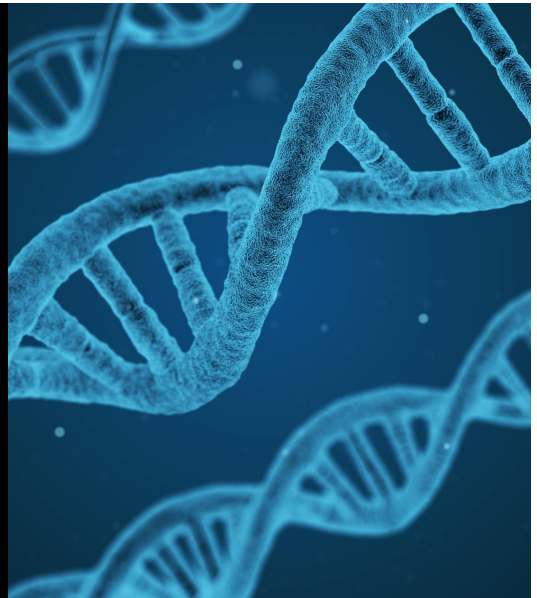
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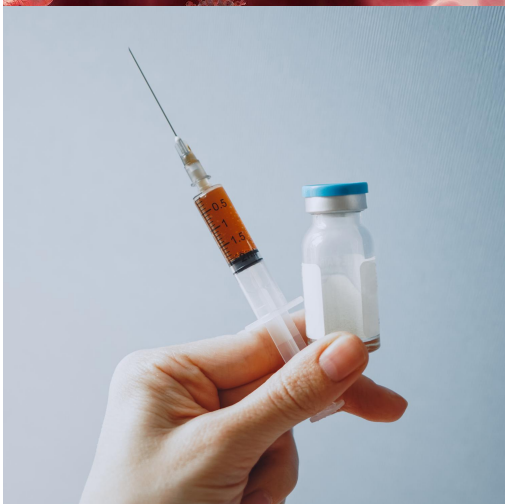
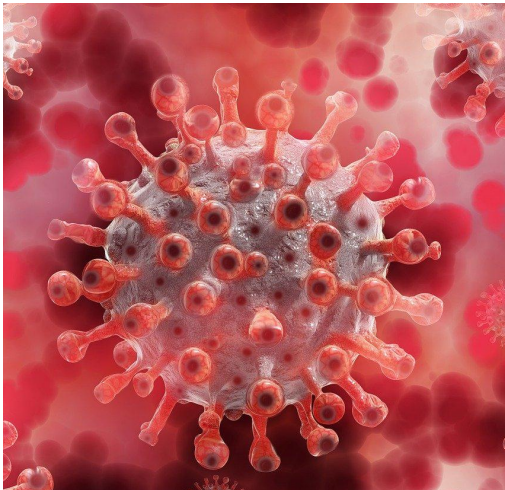
GENE THERAPY COULD TREAT ORAL HERPES

Oral herpes, caused by the Herpes Simplex 1 Virus, affects two-thirds of the world population and causes sores and blisters around the mouth. Till date, no vaccine has been proven efficient for treating this disease but a new study published by scientists from Fred Hutchinson Cancer Research Center could possibly be a cure.

Titled "Gene editing and elimination of latent herpes simplex virus in vivo", this study describes a gene therapy with more than 90% elimination of HSV-1 in a mice model. The gene therapy technique uses two molecular DNA scissors to cut the DNA of the virus in the infected cells.



Articles on COVID-19 you shouldn't miss!



- **A negative COVID-19 test does not mean recovery**

This article by Nisreen A. Alwan, an associate professor of Public Health, makes for a very interesting read! Her argument on why a negative COVID-19 test does not mean recovery is something to ponder upon! You can have a look [here](#).

- **My severe Covid-19: It felt like dying in solitary confinement**

This piece by Christopher Chen is heart-wrenching and the kind of tale we all need to read in these times. If the illness can impact a Cardiologist like that, we can only imagine the impact of COVID people who have no special means of helping themselves! Click [here](#)

- **The unequal scramble for coronavirus vaccines — by the numbers**

This is the article you should read if you think the coronavirus vaccine could end the pandemic. And by the time you reach the end of this piece, you're sure to wonder if you will ever get the vaccine?

Another side note, the Serum Institute of India will produce 1 billion doses in 2021. Needless to say, we're going to wait a long time if we put all our hopes on the vaccine. The article can be found [here](#).

- **Phages in the fight against COVID-19?**

A novel idea, to use phages to fight against the coronavirus. A must-read for those interested in phase immunology. Read the article [here](#).

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1. Photos from Canva, Pixababy and Pexels.
2. Martine Aubert, Daniel E. Strongin, Pavitra Roychoudhury, Michelle A. Loprieno, Anoria K. Haick, Lindsay M. Klouser, Laurence Stensland, Meei-Li Huang, Negar Makhsous, Alexander Tait, Harshana S. De Silva Felixge, Roman Galetto, Philippe Duchateau, Alexander L. Greninger, Daniel Stone, Keith R. Jerome. Gene editing and elimination of latent herpes simplex virus in vivo. Nature Communications, 2020; 11 (1) DOI: 10.1038/s41467-020-17936-5
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